



The newswweekly of enterprise network computing

# NetworkWorld



August 9, 1999

Volume 16, Number 32

The network portal: [www.nwfusion.com](http://www.nwfusion.com)

## IT'S 9 A.M. DO YOU KNOW WHERE YOUR SOFTWARE IS?

**S**oftware metering tools can keep you out of trouble by preventing users from running unlicensed applications. Plus, they can save you money by making sure you're not overspending on software licenses. In our test of six products, Sassafras Software's KeyServer 5.0 scored the best, winning a Network World Blue Ribbon. **PAGE 43.**

**REVIEW:** The VIPswitch 3240 promises flicker-free video, but we found that the performance and management features could use a little fine-tuning. **PAGE 41.**



## Cabletron to spiff up newly independent Spectrum unit

BY JEFF CARUSO

Next month's NetWorld+Interop '99 Atlanta promises to be Spectrum's debutante ball, as the Cabletron business unit comes out from under its parent company with a new direction for its network manage-

ment software and a new image.

Spectrum is working now to develop management software with network hardware vendors such as Cisco and Nortel Networks, as part of an effort to bolster the Spectrum man-

See **Spectrum**, page 10

## Cisco bringing convergence to small offices

BY JIM DUFFY

**SAN JOSE** — Cisco this week is expected to unveil a multiservice router designed to let small and midsize businesses integrate voice and data traffic at a much lower cost than they could with Cisco's previous low-end offering.

The new 1750 multiprotocol router starts at about \$1,800, whereas Cisco's previous low-end offering, the 2600, was overkill in terms of price and features for many small businesses. The 2600 costs between \$2,700 and \$7,500, depending on configuration.

Cisco declined to comment on the 1750. But sources familiar with the product say it is a modular router sporting three

See **Cisco**, page 60

## End of URLs as we know 'em?

*IETF spec could ease use of public, private Web sites.*

BY CAROLYN DUFFY  
MARSAN

Tired of gripes from end users who can't find specific documents on your intranet? Your problem may soon be solved thanks to a proposed Internet standard that replaces long, complex URLs with regular words.

The so-called Common Name standard is on the fast track for approval within the Internet Engineering Task Force, which is expected to designate a formal working group for the task in August. Proponents of the planned standard say a first draft should be completed this fall, with

See **Names**, page 61

More **Online**

- A copy of an IETF draft on the proposal.
- Overviews of existing simplified URL schemes from Centraal, Netscape and others.

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FIND IT

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4134

ON FUSION

## Sales giants totally disagree on NT

*Amway, Home Depot take different e-comm paths.*

BY ELLEN MESSMER

Home Depot, the nationwide building materials store chain, and Amway, which has three million independent sales representatives selling home products, are taking the electronic commerce leap this fall.

It's a tale of two e-commerce sites, and while the companies' business strategies have a lot in common, their attitudes about technology couldn't be more different. For one thing, Am-

way's e-commerce spin-off, Quixtar, is gung-ho on Microsoft technology and will build its e-commerce project upon it. But Home Depot, a Windows NT skeptic, thinks that strategy is nuts.

"We wouldn't even consider NT for this kind of volume," says Mike Anderson, Home Depot's vice president of IS in Atlanta.

Anderson is adamant: NT just isn't scalable or reliable. See **E-comm**, page 60



Home Depot's Mike Anderson won't trust his e-comm project to NT.



A black and white photograph of two hikers on a rocky trail. The hiker in the foreground is on the left, wearing a backpack with a rolled-up mat visible on the side, looking down at the ground. The hiker in the background is on the right, wearing a cap and a backpack, using a trekking pole and looking forward. The trail is rocky and surrounded by a dense forest of evergreen trees under a cloudy sky.

# @outdoors

www.rei.com is an **IBM** e-business



# IBM e-commerce software powers the REI online store

## — and sales that exceed projections by over 360%.

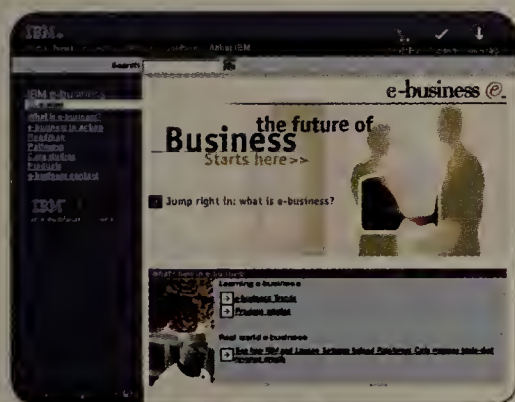
### Can IBM e-commerce software help you?

IBM software is helping thousands of companies build, run and manage powerful interactive e-commerce Web sites. For REI, that means everything from state-of-the-wilderness gear you can buy to clinics on outdoor skills, enthusiast bulletin boards and a world of trips and tours. The scope of REI's offerings led them to IBM.

IBM software provides the building blocks for all facets of e-business, including secure payments, electronic catalogs, and order processing. For REI, proven products, such as Net.Commerce, DB2® Universal Database™ and IBM Firewall deliver the scalability, reliability and security it takes to reach, sell and service a growing community of outdoor enthusiasts.

The results have been nothing less than astonishing. In the first quarter alone, REI's sites generated online sales that exceeded projections by over 360%. And these e-sales are 4 times the size of those in their brick-and-mortar counterparts. Bottom line, REI is growing profits far beyond its wildest expectations.

REI is just one example of the thousands of e-commerce businesses IBM software has helped build and grow. From Web storefronts to integrating your business systems and supply chains, IBM offers a breadth of software products simply unmatched by anyone. All backed by the know-how and support of IBM and its Business Partners.



*Profit from the learning of over 10,000 e-businesses with IBM online resources and our free e-commerce Roadmap. Visit [www.ibm.com/software/ec/roadmap](http://www.ibm.com/software/ec/roadmap)*

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IBM software can help you build, run and manage e-commerce solutions on all major platforms.

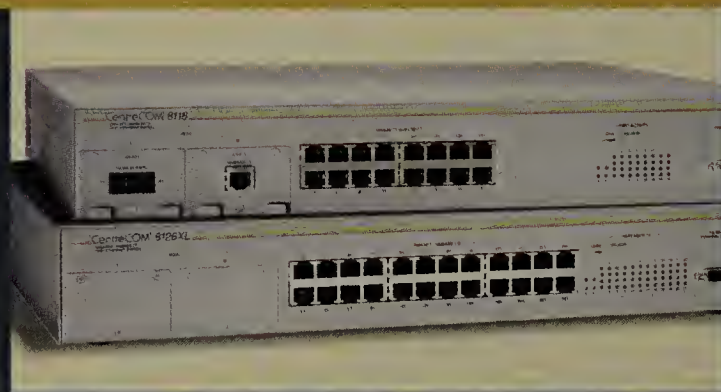


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† Optional uplinks available for AT-8118 and AT-8126XL.

\* I-Cube Second Generation Switching Chipset—Competitive Performance Evaluation.

Prepared by The Silicon Valley Networking Lab ([www.svnl.com](http://www.svnl.com)) and available at [www.svnl.com/test\\_lab\\_reports.htm](http://www.svnl.com/test_lab_reports.htm).

\*\* US list price for Allied Telesyn's AT-8126XL, 24 port switch with FREE 100Mbps fiber uplink module. Free uplink module available through July 31, 1999.

Free Product info enter NWInfoXpress #21 online @ [www.networkworld.com/InfoXpress](http://www.networkworld.com/InfoXpress)



## THIS WEEK ONLINE

**Multimedia on the WAN.** As end users demand more multimedia on the network, net managers are faced with the dilemma of how to upgrade their networks to handle it. On the LAN, you can just throw more bandwidth at the problem, but that's impractical on a WAN. In a special report, we look at the different approaches to managing bandwidth to handle multimedia across the WAN. **DocFinder: 4139**

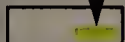
**We have a winner!** After long, grueling hours, our now-exhausted panel of judges has picked a winner in our server name contest: Frankenlinux. It's not the name itself, but the story behind it that won a Dell PowerEdge 1300 server for Paula Hinchliffe of Seal Master Corp. in Kent, Ohio. Read her saga, along with those of the other finalists, then jump into the contest forum to see all the entries. What do you think of our choice? **DocFinder: 4134**

**Help Desk.** A user with an electronic commerce site outside the corporate firewall is seeking help on automating the movement of files to the site via FTP. Read the details of his setup, then offer advice. **DocFinder: 4132**

**Security Alert.** Last week's bulletins included alerts about vendors releasing applications to warn end users about potentially harmful Office 97 documents embedded in Web sites; one about possible denial-of-service attacks against Check Point firewalls; and another about sloppy programmers opening up potential security holes in applications for the BSD flavor of Unix. Security Alert features daily bulletins and security news from key application, firewall and security vendors as well as from *Network World* and the IDG News Service. **DocFinder: 4033**

### How to get onto Network World Fusion

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Nonsubscribers must fill out an online registration form.



# NetworkWorld

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AUGUST 9, 1999

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### HOW TO CONTACT US

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## Special Focus HIGH-SPEED ETHERNET

10-Gigabit Ethernet is coming soon to a LAN near you. Page 22.

## FEATURES

IT'S 9 A.M.

### DO YOU KNOW WHERE YOUR SOFTWARE IS?

**S**oftware metering tools can keep you out of trouble by preventing users from running unlicensed applications. Plus, the tools can save you money by making sure you're not overspending on software licenses. In our test of six products, Sassafras Software's KeyServer 5.0 scored the highest, winning a Network World Blue Ribbon. See James Gaskin's review on PAGE 43.



The VIPswitch 3240 promises flicker-free video, but we found that the performance and management features could use a little fine-tuning. See review on PAGE 41.

Technology Editor Lee Schlesinger gets hooked up with Acer NeWeb's Wireless PC Connection Kit. PAGE 48.





## NEWS BRIEFS, AUGUST 9, 1999

**Microsoft kisses up to Unix**

Figuring that there will be some Unix in every network, Microsoft last week began beefing up its technology for linking Windows 2000 and Unix environments. The company posted the first beta of Services for Unix 2.0, with the final release expected early next year. The package includes a server-based Network File System gateway so clients don't have to run specialized software to access Unix files. It also supports Microsoft Software Installer, Microsoft Management Console and 20 additional Unix utilities and scripts. For more information, go to [www.microsoft.com/windows/server/News/fromMS/sfu.asp](http://www.microsoft.com/windows/server/News/fromMS/sfu.asp)

**Hacking the antihackers**

How ironic. Antivirus software vendor Symantec last week saw one of its European Web servers broken into by a hacker group calling itself Blowworm. The hackers defaced the Symantec home page with a message saying they had loosed a computer "worm" to infect Symantec's internal systems and product downloads.

Symantec spokesman Richard Saunders adamantly denied that any such worm — a type of computer virus designed to carry out malicious tasks without necessarily replicating — had made it into Symantec's internal network. He added that Symantec has run tests on the antivirus software it has available for download, and has found no evidence of any infection.

**Y2K bug kills off Free-Net**

Chalk one up for the Y2K bug. Cleveland Free-Net, the nation's first free community computer network, will go out of business Oct. 1. Free-Net's owners say the system, in operation since 1984, will self-destruct at year-end because the computer program written for it can't recognize the year 2000. The owners say rewriting Free-Net's computer program would take too much time and personnel. Free-Net lacks the graphical quality of the Web but at its peak served 10,000 users a day. Free-Net still has about 7,000 daily users.

**Put it in my e-box**

The number of electronic in-boxes that handle voice e-mail and fax messages will grow dramatically in coming years. A market research study published by International Data Corp. (IDC) estimates an increase from 35,000 such in-boxes last year to 25.4 million by 2003. For IDC, the term "unified messag-

ing" only applies to scenarios where the user can retrieve messages through a phone and through a Web-connected PC. One reason for the growing popularity of these in-boxes is that about a third of them are offered as free services, according to IDC.

**Hell's cells**

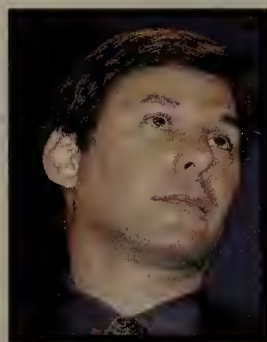
It may come as no surprise to customers who live in Boston, Detroit, Los Angeles or San Francisco, but a new study shows these locations are the most expensive U.S. cities for wireless phone users. According to Econ One Research, cell phone users in Los Angeles buying between 600 and 1,500 minutes of talk time pay an average of \$120.69 per month, while those in Boston and San Francisco pay \$117.32 and \$117.27, respectively. By contrast, heavy cell users in Chicago pay an average of \$111.56 and those in Philadelphia pay \$93.58, Econ One says.

**IBM and 3Com agree to share access to patents**

IBM and 3Com last week said they would share access to network and communications patents. The motive behind the agreement is to speed products to market, the companies say. The companies did not disclose financial details of the cross-licensing pact, but analysts say it could be worth up to \$1 billion over five years. The companies have had various business and technology agreements with each other in place for more than seven years.

**Sun's Baratz takes flight**

Sun last week said goodbye to Alan Baratz, the company's top evangelist for commercializing Java. Baratz, who served as president of Sun's Java Software division for three years, has joined an affiliate of investment bank Warburg, Pincus & Co. as a managing director and will become a member of the Warburg, Pincus Information Technology team.



Baratz reaches his Java limit.

**Office 97 patch taking overtime**

Microsoft is still working on a patch for a vulnerability in Office 97 that could let a hacker delete files on a user's hard drive. The hole lets code embedded in an Excel 97 spreadsheet take over a PC and perform malicious operations. Such a spreadsheet can be sent via e-mail or linked to a Web page. The vulnerability exists in Version 3.51 of Excel's Jet database access engine. Microsoft says some customers can upgrade to Jet 4.0, but others will want to wait for the patch.

# FCC makes it easier for RBOCs to compete

*Order to let RBOCs lower prices in hot spots.*

BY TIM GREENE

WASHINGTON, D.C. — This fall you should be able to negotiate better deals for T-1 and T-3 access lines from major local carriers in your area, but only if your business sites are located in areas where plenty of competition exists.

Based on a Federal Communications Commission ruling last week, regional Bell operating companies can lower rates in service zones from which they derive the bulk of their access revenue. The ruling applies to dedicated links between customer sites and long-distance carriers.

In practice, the ruling means RBOCs can more aggressively enter major metropolitan areas where competitive local exchange carriers (CLEC) have dominated. In those locations, CLECs have been driving down access line charges in fierce competition with each other.

Before the ruling, RBOCs had to file tariffs that spelled out pricing options for each proposed new service. RBOCs could not sell the service for less than the tariff price. Also, the tariffs applied to entire states or a multistate service area.

RBOCs say those requirements hindered their businesses because they could not lower prices in response to competition without lowering prices in places where there was no competition.

The ruling allows RBOCs to lower prices by zone without lowering prices in places where there is less competition. The idea is to make it easier for RBOCs to tailor deals with individual large customers.

While the FCC decision gives

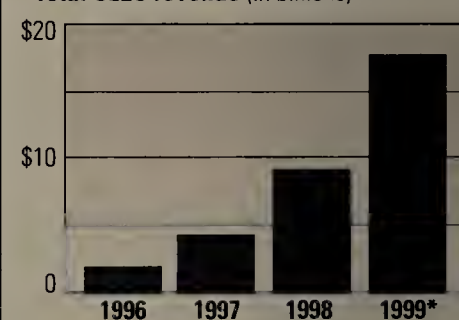
RBOCs a tool to better compete against CLECs, the resolution probably will not have a dramatic effect on the average price for access lines, according to J.B. Haller, an analyst with Current Analysis in Sterling, Va.

"Large business customers are already getting great prices. Competition in this

**Bad news for CLECs?**

New FCC regulations that allow RBOCs to compete with CLECs for local access lines could cool the red-hot growth CLECs have experienced in recent years.

Total CLEC revenue (in billions)



\*Projected

SOURCE: NEW PARADIGM RESOURCES GROUP, CHICAGO

area has already occurred," Haller says.

Still, RBOCs applaud the decision. "This action will begin to allow us to meet customer demand for these services, as well as roll out new products more quickly," says Frank Bumper, vice president for federal regulatory relations at Bell Atlantic.

The order will immediately do the following:

- Streamline tariff filings so RBOCs can change prices more quickly and easily.

- Lets RBOCs set up zones within states where the price for the same service can vary zone to zone. Each zone must generate at least 15% of an RBOC's revenue for a particular service.

- Deregulate in-region long-distance fees as long as RBOCs allow competitors to supply in-region long-distance services without requiring customers to dial more digits. ■



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# Microsoft suite to safely link Win 2000 to the 'Net

*'Comet' network and security tools may be preview of Microsoft Proxy Server 3.0.*

BY JOHN FONTANA

In order for corporations to secure connections between Windows 2000 and the Internet, Microsoft is developing a host of new network and security tools for its future flagship operating system.

The suite of products, code-named Comet, includes features similar to those in Proxy Server 2.0 for Windows NT and may even be the precursor to the next version of that server.

A proxy server is a key security feature for connections between networks because it shields internal clients from direct access with other networks, in particular the Internet. In doing so, the proxy server prevents hackers from obtaining internal IP addresses and details of a private network.

Therefore, a proxy helps make connections to an outside network more secure. It

also provides a platform on which third-party vendors can build applications, such as virus detection.

Currently, Microsoft does not have a proxy server that runs with Windows 2000, but that will change soon. Service Pack 1 for Proxy Server 2.0, expected to ship in the coming week, will allow the server to run with the new operating system.

The Comet suite includes a secure firewall, high-performance proxy/cache services, a fax server, a Web-based interactive voice response engine and other connectivity services.

## Proxy Server 3.0 in disguise?

The proxy/cache services may actually be the beta version of Proxy Server 3.0. The Comet release notes say users who deploy Comet are "bound to the Proxy Server 3.0 pre-beta agreement." While Comet is not publicly available, Web site

BetaNews.com obtained a copy of Comet's release notes and detailed the product's feature list on its site last week.

## Catch a Comet

**Microsoft is entering pre-beta with a suite of network communication and security tools called Comet. The tools, designed for Windows 2000, may ship as a bundle or individually once they are completed. Here is a look at the components:**

- Secure firewall
- High-performance proxy/cache services
- Fax server
- Web-based interactive voice response engine

The proxy services also appear to be key because they contain a caching feature that boosts Web traffic performance by storing pages locally. As more companies rely on Web-based applications, caching

becomes critical.

Comet also is expected to ease management and configuration of the proxy.

"Comet may be a way to compete with Novell's BorderManager," says John Kretz, president of Enlightened Point Consulting Group.

BorderManager provides security management through services for firewalls, virtual private networks, single sign-on and proxy/cache. In July, Dell and Compaq began shipping caching appliances based on BorderManager technology.

"Maybe Microsoft is tired of losing sales to BorderManager," Kretz says.

Novell's BorderManager is tied to Novell Directory Services, and Microsoft may be working to tie Comet to Active Directory.

"I think Microsoft is endorsing our architecture," says Smita Deshpande, director of marketing for Internet solutions for Novell. "Microsoft now has a server-centric view, but centralized, scalable management run through the directory is a compelling security architecture."

A Microsoft spokeswoman only would say that the company is working on a group of technologies code-named Comet. She says the work includes firewall, caching and telephony features.

## More features ahead

Comet also is likely to bring other advanced communications features to Windows 2000 servers. The suite includes desktop client software to support such things as Winsock Proxy, Modem Sharing and Fax Services on Windows 9x and NT 4.0, according to Nate Mook, Webmaster of BetaNews.com.

The suite also includes beta preview versions of Microsoft's H.323 Proxy and H.323 Gatekeeper, which will support enhancements to Microsoft's NetMeeting desktop conferencing application.

Microsoft has established a secure Web site for testers of the pre-beta software, which is being released as a package but may be marketed as individual products upon final shipment, according to the release notes.

Comet runs exclusively on Windows 2000 Beta 3 Release Candidate 1, which shipped July 1.

Microsoft: [www.microsoft.com](http://www.microsoft.com)

# Qwest and IXC join big boys with DSL offerings

*Digital subscriber line local access option less expensive than alternative connections.*

BY TIM GREENE

Long-haul carriers Qwest and IXC are separately adding digital subscriber line services to their local access

portfolios, enabling customers to tie remote offices to central sites for less than alternative methods.

Customers can go to one carrier and order the local access and long-distance segments of the service rather than dealing with two separate providers.

Although it is not available in as many places as dedicated lines, 1.5M bit/sec DSL service at \$300 to \$400 per month is less expensive than alternative connections. T-1 lines, for instance, can cost more than \$1,000 per month.

Analysts say Qwest and IXC should give long-distance leaders AT&T, MCI WorldCom and Sprint, which already offer DSL access services, a good fight in the DSL market.

"It's still a young market," says Jilani Zeribi, an analyst with Current Analysis, a consultancy in Sterling, Va. "There's

## Diving into DSL

**Qwest and IXC last week announced DSL Internet access offerings. A partial price list:**

Qwest services		IXC services*	
Speed	Monthly price	Speed	Monthly price
128K bit	\$119	160K bit	\$169
768K bit	\$329	784K bit	\$399
1.5M bit	\$359	1.5M bit	\$599
7M bit	\$849		

\* IXC offers discounts for multiple-year contracts and packages customer gear with its service for an additional monthly fee.

no dominant leader by any stretch of the imagination."

## Getting a little help

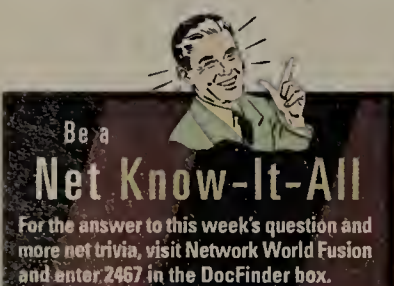
Qwest and IXC are using other service providers to set up DSL links between their backbones and customer sites. Qwest and IXC then drop the traffic onto the Internet or transfer it to other customer sites.

Qwest's service will be

offered in conjunction with Covad Communications and Rhythms NetConnections, two carriers specializing in establishing local-loop DSL connections. Qwest has invested in both companies.

IXC is using NorthPoint Communications and plans to add other partners.

Teaming up with other carriers to provide DSL is a See **Qwest**, page 61



For the answer to this week's question and more net trivia, visit Network World Fusion and enter 2467 in the DocFinder box.

## This week's question:

Which network company is led by President and CEO Sterling Williams?

[www.nwfusion.com](http://www.nwfusion.com)

## Correction

A recent graphic (NW, August 2, page 17) incorrectly listed the 1998 worldwide revenue for the external RAID system market. The correct 1998 total revenue was \$14.1 billion.





Light?

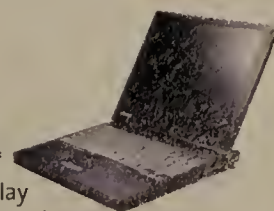
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# Big Blue planning fall RS/6000 bash

BY MARC SONGINI

**SOMERS, N.Y.** — In an effort to become a more serious contender in the Unix-powered symmetric multiprocessing (SMP) market, IBM is readying a high-end RS/6000 system powered by 24 processors.

The S80 Enterprise Server, scheduled to be announced in October, will be driven by a new version of IBM's Unix derivative, AIX, which is said to boast transaction-processing and caching improvements.

With the S80, IBM hopes to fill out its Unix hardware line and go head-to-head with servers such as the Sun Enterprise 6500 and 10000, as well as V-class machines from Hewlett-Packard.

"Pushing SMP to this level is a watershed for IBM," says Jean Bozman, an analyst with International Data Corp. (IDC), a market research firm in

**For more information on IBM's AIX plans, see page 15.**

Framingham, Mass.

IBM says the S80 is the successor to the S70 Advanced, which can be upgraded to S80 status by swapping out CPUs. While the official announcement is slated for October, the S80 could start shipping next month.

It will be possible to configure the box with up to 24 PowerPC Pulsar processors — double the number of the S70 Advanced. IBM claims that unlike its SMP competitors, each of the S80's processors can be exploited to virtually maximum capacity. Usually, processor performance in an SMP box starts to degrade after a certain threshold because of internal bottlenecks, IBM says.

The company says it has avoided the bottlenecks by optimizing AIX Version 4.3.3 to

more efficiently schedule tasks across the processors, as well as by increasing the bandwidth in the bus used to connect processors in the S80.

With the added horsepower, the S80 will be able to simultaneously handle a variety of

select RS/6000 functions, such as Web serving, guaranteeing the Web application gets the requisite processing power.

To further boost Web server performance, IBM has made several other AIX tweaks, such as placing caching directly under the control of the AIX software kernel.

The S80's processors can also cache Web pages directly to the server's main memory, boosting the number of cachable pages. Moreover, the S80's memory has been increased to 64G bytes, double that of the S70 Advanced.

With these improvements, a 12-way S80 is said to be able to handle 40,161 Web hits per second, a threefold increase over the S70 Advanced, and a 66% increase over the former leader, the HP 9000 N-Class server, according to Standard Performance Evaluation Corp., a non-profit testing firm.

While pricing has yet to be determined, IBM executives say the S80 will cost more than the S70 Advanced, which ranges between \$150,000 and

\$300,000. The S80 will be competitive with the Sun Enterprise 10000, which can run into the millions of dollars, IBM says.

Just where the RS/6000 fits in vis-à-vis servers from newly acquired Sequent is not entirely clear. However, IBM has maintained that the Sequent NUMA-Q line sits just below the RS/6000 and just above the Netfinity PC server line. NUMA-Q runs a proprietary version of Unix, which IBM wants to use to get access to nonuniform memory access capabilities for the RS/6000 and other servers.

IDC's Bozman says IBM will use the S80 to offer users a choice: They no longer have to buy the parallel processing SP RS/6000 supercomputer to boost Unix performance. Users can go to the S80 and exploit its SMP technology, instead.

Beta testers from ACI Worldwide, a maker of financial transaction software in Omaha, Neb., claim the S80 has an impressive level of performance. ACI is an IBM partner and an RS/6000 user. ACI executives claim S80 has the necessary scalability and speed required by large banking institutions, and any bottlenecks found during testing were easily fixed. ■

## RS/6000 S80 Enterprise Server at a glance

- Up to 24 PowerPC processors.
- New IBM copper chips that run cooler and burn less energy.
- Workload management feature.
- Up to 64G bytes of memory.
- Up to 45 terabytes of storage.



compute-intensive applications, including Web serving, enterprise resource planning and decision support, IBM claims. This ability should help companies looking to consolidate servers. IBM has also added a workload manager feature to AIX that will prioritize

**Spectrum,**  
continued from page 1

agement platform's handling of nonCabletron hardware. The business unit is developing software for managing policies, virtual LANs and traffic reporting across different vendors' hardware. In addition, some Spectrum functions will also be adapted to work with other network management platforms.

"We'll try to get the buzz going at Interop" about Spectrum, says Michael Skubisz, executive vice president of software at Cabletron and head of the business unit. He acknowledges that half the battle is industry perceptions: "We've got a good product, but no market awareness."

Spectrum has hired a "brand development" firm to come up with a new look and a new name by Interop. While it is likely to keep the Spectrum name for its products, the organization will probably be renamed to distance it from Cabletron.

Spectrum's image problem stems from the fact that it's not

widely used, says Valerie O'Connell, director of enterprise management at Aberdeen Group in Boston. "It's no different an image problem than a vampire has when it looks in the mirror," she says.

O'Connell's observations are backed up by research from Dataquest that shows Spectrum had sales of \$64 million in 1998 — compared to market leaders Tivoli and Hewlett-Packard, which in the same time period had sales of \$201 million and \$209 million in management software, respectively.

O'Connell says it may be too late for Spectrum to reshape itself. "It's not like the market is crying out for yet another all-encompassing management platform," she points out.

Cabletron's Skubisz disagrees. "The window hasn't even fully opened for us, let alone closed," he says.

Though rumors abound, the Spectrum business unit isn't quite ready to become a totally separate company, Skubisz says. Within the next two months, it will be operating independently of Cabletron, but whether

Spectrum ultimately becomes a separate company will depend on how well the operation does with its new structure.

Meanwhile, Spectrum will

agement platforms, such as Computer Associates' Unicenter, HP OpenView and Tivoli Enterprise.

Spectrum's VLAN Manager software, introduced last year, will discover other vendors' switches using the IEEE 802.1Q VLAN standard and trapping alarms and events generated by VLANs on those switches.

Spectrum's Traffic Accountant software will also expand beyond Cabletron equipment. Introduced in June, the software measures the bandwidth used over time by different applications, such as e-mail and database transactions, and generates reports. Today the software works with Cabletron's SmartSwitch Router; future versions will support Cisco hardware, says Patrick Kelly, director of product management for the business unit.

## Policy pieces

**Cabletron's Spectrum business unit is rolling out a number of software components for setting enterprisewide policies regarding access to resources:**

**Policy engine:** Updates directory when changes in network configurations could affect policies.

**Flow accounting server:** Reports on how well rules are affecting network services.

**Policy Manager:** Governs access control, schedules when policies are enforced and determines application priority.

**VLAN Manager:** Manages VLANs across different vendors' switches using the IEEE 802.1Q standard.



Mike Skubisz, head of Cabletron's Spectrum business unit.

adapt some of its products to handle multiple vendors' equipment. The enhancements will debut in four to six months, will likely be shown at Interop and will be adapted to work with non-Spectrum man-

Spectrum is also planning products for setting policies across multiple vendors' hardware. The business unit is planning to roll out a policy manager in four to six months that governs access to resources based on the IP address of the user, Kelly says. The software will work on the SmartSwitch Router first, and future versions will extend to Cisco, Nortel and Lucent gear.

An important part of enforcing policies across an enterprise is keeping a directory of network resources, users and policies. Spectrum is building a policy engine to update directories whenever the network changes, and the business unit is working with Microsoft, Netscape and Novell to ensure directory interoperability.

In addition, Spectrum will in coming weeks bundle Netscape Directory Server 4.0 with its policy products so users don't have to purchase a directory separately, Kelly says. ■

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4  
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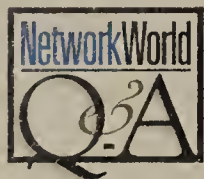
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# Tivoli CEO touts new mgmt. model

Jan Lindelow has sights set on managing bigger and more complex nets.



In the three years since IBM bought Tivoli, the

network and systems management vendor has flourished, becoming a \$1.5 billion business. Part of Tivoli's success can be attributed to company Chairman and CEO Jan Lindelow, who last week spoke with Network World Senior Editor Jeff Caruso following Lindelow's keynote address at the Enterprise Management Summit in Santa Clara.

You mentioned in your keynote that we need to "create a management model for the era

of pervasive computing." Can you explain what you mean by that?

If you look at Tivoli, where we have become almost the standard in the large enterprise world, we manage systems with 50,000 or 100,000 end points. That's still not a million devices, or 10 million devices, and that's going to require an even more robust, even more scalable environment to be able to do that.

How do you get there?

The base technology we'll build on our own. But we welcome participation from others to make sure that applications developed by us, BMC or anybody else can snap in and work well with our base. Within Tivoli, we just created an advisory board of big customers, and they uniformly said this industry needs a



bit of standardization.

What are the key challenges for companies trying to manage systems and networks in the new e-business world?

You don't own [the network and systems] many times. And in order to manage them, you need to work with someone else — your supplier or buyer. That's why you need technologies that allow you to collaborate across the 'Net and define policies in that relationship. In the next 12 to 18 months, we're going to roll out all the stuff you need to manage in that environment, whether it's security, the distribution of things, administration or monitoring.

How do you respond to customers who say that traditional management frameworks are too complex and expensive?

I said two years ago this is too complex — way before Gartner Group or anybody else said it. We've invested hundreds of millions of dollars to fix that problem. Our customers can now roll out software much quicker and get a quicker return on investment.

How much is IBM involved in Tivoli's business these days?

It's pretty much the same [as it has been from the start]. Tivoli has become smarter about leveraging IBM in a positive way in a couple of areas. The first area is research, especially on the security side. We use [IBM technology] now in our Cross-Site [e-business management software] for intrusion detection. The second area is reach around the globe.

We grew last quarter at three times the industry rate. This is generic growth, not acquisitions. Clearly, we couldn't have done that without IBM helping to open doors in foreign countries. When Tivoli was created, the overseas business was less than 5%. This year, it will be more than 50%. But in terms of how we sell, how we go to market, how we serve our customers — we do that ourselves and always will.

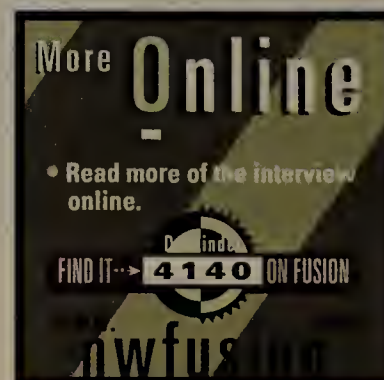
Are there cases in which being owned by IBM is a hindrance?

When we worked a year ago with some of the big telcos, there was some suspicion that IBM was going to become a competitor. I personally saw some of that with AT&T. A year ago Cisco might have had the same suspicion. I know [those suspicions] are gone today. Other companies know that IBM is genuine when it says that Tivoli is driven by open market requirements, and we prioritize based on those.

There are a lot of systems and network management start-ups out there. Are Tivoli and other established players missing opportunities that these start-ups are going after?

That's always the case. If you consider the range of applications that can run on top of our framework, can I assure you that every year all of our applications are best of breed? No. Can I assure you that we will always have three or four that lead the pack? Yes. But that leaves a lot of room for new areas and entrants, which is why I've talked about specialization, which I really encourage.

If we in the industry can ensure that a technology quickly gets leveraged across the industry once it's developed by a start-up or whatever, then we're all better off. This is, within a standardized environment, how you work together. ▀



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## More breaking news

Network World Fusion now has more news than ever. Check out these stories online:

### Senator wants 'Net tax:

New U.S. legislation that would levy a 5% tax on goods sold over the Internet could end a three-year moratorium on new Internet taxes. The Sales Tax Safety and Teacher Funding Act was recently introduced by Sen. Fritz Hollings (D-S.C.). If approved, the bill would impose a 5% retail and excise tax on goods sold over the telephone, through catalogs and over the Internet. **DocFinder: 4143**

### Sun touts Java appliances chip — again:

Sun apparently hopes to recharge its lagging efforts to bring to market a Java-based microprocessor for information appliances. The company soon will present details of a revamped chip architecture, now called Microprocessor Architecture for Java Computing (MAJC). But Sun's Java chip track record has been a notable failure to date. It was supposed to release the microJava 701 chip for this same market last year. That product never materialized. **DocFinder: 4144**

### Bell Atlantic frame relay goes nationwide:

Bell Atlantic and Intermedia are teaming up so you don't have to deal with multiple sales reps when you set up a frame relay WAN. Through a single Bell Atlantic salesperson, you can order frame relay service that connects sites anywhere in the country, even outside the Bell Atlantic region. **DocFinder: 4145**

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# New Java middleware opens database access

BY JOHN COX

OTTAWA — New middleware from ThinWeb.com is designed to make downloaded Java applications more compact and enable them to more easily access several database servers at once.

Today, Java applications downloaded over the Web to a client are burdened by having to carry heavy database access programs, called drivers. The drivers, which use the Java Database Connectivity (JDBC) interface, typically range from 500K bytes to a full megabyte of code. This inflates the total application by two to four times, which translates into long download times.

By contrast, ThinWeb.com's ThinAccess middleware adds no more than 30K bytes to the downloaded application. This client code connects with the ThinAccess server, which runs on a Web server or other computer. The client passes data requests and updates to the ThinAccess server. The server, in turn, makes use of the standard JDBC drivers, now mounted on the server instead of laptops or PCs, to connect to databases from vendors such as Oracle and Sybase.

ThinAccess can work with any JDBC driver and also works with Microsoft Open Database Connectivity drivers to connect with Microsoft Access and SQL Server databases.

## Trimming the fat

"Minimizing the footprint size of the database driver is very important," says Chris Hawkins, principal programmer/analyst at Health Partners, a Bloomington, Minn., HMO.

Health Partners has a Java application with a little over 100K bytes of code. If Hawkins used the latest database driver from Oracle, the application would balloon to more than 1M byte. By using the ThinAccess client, his total application remains well under 150K bytes. "And it's a moderately complex application," Hawkins says.

Other key ThinAccess features are HTTP tunneling, which greatly simplifies interactions with Internet firewalls, and the ability to connect with a database that's on a different computer than the one from which the initial application downloads.

ThinAccess also lets the downloaded application access more than one back-end database, with no additional client code needed. Today, users would need to download a driver for each separate database brand they access.

ThinAccess also works with Enterprise Java Beans servers and Java servlets. Servlets are Java programs

that run on a server and are triggered by an HTML request from a Web browser. The servlet connects to

ThinAccess, which then takes over the database access work.

ThinAccess has been in beta testing for almost nine months and will be released this week. The software costs about \$1,000.

ThinWeb.com: [www.thinweb.com](http://www.thinweb.com)

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# Infrastructure

**TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage**

## Briefs

Hewlett-Packard last week unveiled a 1000Base-T Ethernet switch modules that supports Category 5 twisted-pair copper cable. The ProCurve 1000Base-T switch module already lets customers use horizontal Category 5 cable in places where new cable is difficult to install. The module can also help customers avoid new installations of fiber-optic cables, which HP says cost roughly three times as much.

The module allows connections of up to 100 meters. These connections can be within or between wiring closets and can interconnect switches or connect switches to servers. The module can also operate at 100M bit/sec.

The HP ProCurve 100/1000Base-T switch module works with the HP ProCurve Switch 8000M, 4000M, 1600M and 2424M and costs about \$300. It will be available in October.

HP: [www.hp.com/go/procurve](http://www.hp.com/go/procurve)

Apex last week unveiled a management product that lets network professionals monitor, control and manage remote servers. Dubbed the Emerge 2000, the hardware/software combination lets customers dial in directly over the network or from the Internet to keyboard-video-mouse (KVM) switches attached to servers.

The Emerge 2000 sits between the telecommunications line and the KVM switch.

The Emerge 2000 contains a 56K bit/sec modem and works with Apex's OutLook and ViewPoint switches. Emerge software lets users view multiple servers at once and switch control from one server to another simply by toggling or tabbing from one window to the other.

Pricing for the Emerge 2000 starts at \$5,000. The product will be available later this month.

Apex: [www.apex.com](http://www.apex.com)

## IBM: Monterey isn't the end of AIX

*Company claims new Unix flavor just a more powerful, feature-filled version of AIX.*

BY MARC SONGINI

IBM wants to reassure its Unix server customers that the coming of Project Monterey is not the swan song for traditional AIX, the company's version of Unix.

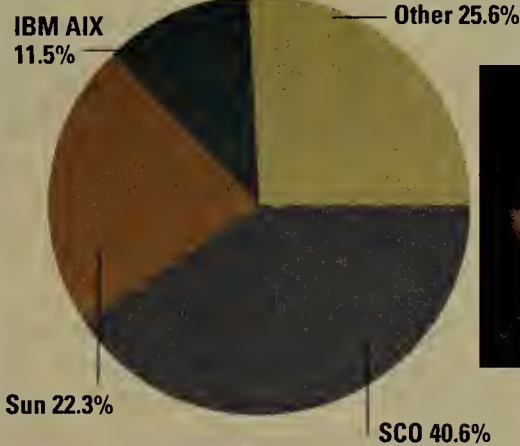
Scheduled for release in the third quarter next year, Monterey is a joint venture between the Santa Cruz Operation (SCO), IBM and its newly acquired subsidiary, Sequent Computer. The three companies are developing a single Unix variant that will run on 32- and 64-bit — or IA-64 — Intel chips. Monterey will be available for Intel vendors to bundle on their servers, and IBM will put the operating system in its RS/6000 line. Other server manufacturers are also expected to support Monterey: For example, PC server giant Compaq has endorsed Monterey to run on its boxes.

IBM is hoping Monterey will strengthen its position in the Unix arena. The release of Monterey should pull in software developers and boost AIX's current revenue by two to three times, says Brad Day, an analyst with Giga Information Group, a consultancy in Norwell, Mass. He notes, however,

### Big Blue's new Unix

**IBM is shooting for the top spot in the Unix market with its Monterey Unix operating system, developed jointly with SCO.**

1998 worldwide Unix server operating system shipment market share:



Total shipments: 758,000

SOURCE: IDC, FRAMINGHAM, MASS.



**"The message is: AIX is Monterey."**

Samant, head of IBM's AIX division

that IBM does not release sales figures for AIX.

With all the marketing hype surrounding Monterey, IBM has had to remind customers that Monterey will be primarily just a new — albeit more pow-

erful — version of AIX, and not a brand-new operating system. Indeed, Monterey will be 90% AIX, says Rajiv Samant, head of AIX at IBM. And applications running on Monterey can be easily ported to run on PowerPC AIX and vice-versa, he says. In fact, users should think of PowerPC AIX and IA-64 as the same operating system, he says.

After recompiling, Monterey should be able to handle existing AIX applications without any performance degradation, says Miles Barel, a program director for Unix at IBM. Incompatibility defects between one release of AIX to the next have been few, he notes. Even when AIX 4.3, which was the first version to have See **Monterey**, page 16

## Cisco bolsters Catalyst 5000

*New modules for LAN switch increase port density, add QoS.*

BY JIM DUFFY

SAN JOSE — Cisco last week unveiled three modules for its Catalyst 5000 LAN switches that feature enhanced quality-of-service capabilities and greater port density.

These new features are designed to let users classify traffic into any one of multiple priority classes. Those classes can be managed to ensure that applications such as voice are appropriately prioritized.

The new products include a 24-port



**Cisco's Catalyst 5000 now lets users clarify traffic types.**

10/100 RJ-45 module, a 36-port 10/100 RJ-21 module and a 24-port 100FX MTRJ multi-mode fiber module. QoS features on the new modules include Weighted Random Early Detection (WRED) drop threshold management support, wire-speed Layer 3 forwarding, Fast EtherChannel, 802.1Q/p, and Cisco's InterSwitch Link protocol, which tags packets

with virtual LAN identification information. WRED technology drops low-priority packets to avoid congestion.

The 36-port 10/100 module and the 24-port 100FX module increase the Catalyst 5000 family's maximum port density by 50% and 100%, respectively. One user is especially excited about the 24-port 100FX card.

"It's such a damn good idea that you can cram as many fiber connections in the same physical space," says Kelly Carpenter, systems manager at Washington University's Genome Sequencing Research Center in St. Louis. "I've been waiting for this."

Carpenter is already using the 24-port 10/100 RJ-45 modules, and he says they're working fine. He is not using any of the QoS features, however, because he's not putting any "time-dependent" traffic on his LAN.

The 24-port 10/100 module lists for \$4,995; the 36-port 10/100 module lists for \$7,495; and the 24-port 100FX multi-mode fiber module lists for \$12,495. All modules are shipping now.

Cisco: [www.cisco.com](http://www.cisco.com)



# ATL bolsters Fibre Channel storage options

*New products let users mix and match SCSI-Fibre Channel devices.*

BY DENI CONNOR

IRVINE, CALIF. — Storage manufacturer ATL Products has introduced three products aimed at helping customers add ATL's existing SCSI-based tape libraries to storage-area networks (SAN).

The products let customers purchase the ready-made Fibre Channel-enabled tape libraries or maintain their current legacy SCSI tape libraries and upgrade them to include Fibre Channel capability.

Strategic Research of Santa Barbara, Calif., estimates that SCSI accounts for 98% of the connections between host systems and storage. The research firm predicts that by 2000, the SAN arena will be five times bigger than last year's \$3.5 billion market.

SANs enable high-speed direct access from all servers to all storage devices, eliminating traffic over an IP network. ATL manufactures SCSI digital linear tape (DLT) libraries ranging from two to 45 drives and up to 18 terabytes or more than 1,300 cartridges.

The first product is an embedded Fibre Channel module for ATL's P1000 and

P3000 Series tape libraries, which are based on the company's Prism Library Architecture. Prism is an open system that uses a PCI back-



**ATL's P3000 box is aimed at large users with high storage-availability needs.**

plane for expansion.

Both tape libraries can operate in Fibre Channel Arbitrated Loop (FCAL) or switched fabric environments over multimode fiber-optic cable.

In these SAN environments, the tape library connects to the SAN via its Fibre Channel connection. Servers

access data directly from the SAN via installed host bus adapters.

The distance between the server and the library, hub or switch cannot exceed 500 meters.

The P1000 Series is for departmental and mid-size networks and features up to four DLT tape drives and 30 cartridges, or 1.05 terabytes of storage capacity. It has hot-swappable drives and user-replaceable components to reduce potential service calls.

The P1000 starts at \$30,000 for a two-drive, 16-cartridge configuration. Each Fibre Channel module has three ports. One Fibre Channel module can be added to the P1000 for \$6,600.

The P3000 Series is aimed at enterprise applications where high availability is required. It features up to 16 DLT tape drives and 326 cartridges for up to 11.4 terabytes of storage capacity.

The P3000 has hot-swappable DLT drives, power supplies and fans, as well as redundant power supplies, fans and AC sources.

The P3000 starts at \$98,000 for a two-drive, 187-cartridge configuration. Up to three Fibre Channel modules with a total of 15 ports can be installed on a P3000 for added bandwidth.

ATL also provides a service under which the company will install the Fibre Channel module in customers' existing P1000s or P3000s. The price is \$7,300, including installation. The module will be available next month.

The ability to easily upgrade systems with Fibre Channel support attracted Bank of America in Chicago.

"At one location, we use water cooling under the floor to cool the room. The idea of dragging 45 feet of SCSI cable under the floor and the inherent dangers of that made us look at Fibre Channel, says

Ron Engel, senior systems engineer at the bank. "We chose ATL because their Fibre Channel module was on a circuit board that could be slotted into our devices — other vendor proposed adding separate hubs or routers."

A third product works with ATL tape libraries that do not use a PCI backplane and are not as easily SAN-enabled.

For the PowerStor, 520, 7100 and 2640 Series, the company offers a Fibre Channel bridge from Crossroads Systems.

The Crossroads Systems 4200 Fibre Channel-to-SCSI Router allows bidirectional communication between the Fibre Channel SAN and legacy SCSI devices. It lets two SCSI buses connect to the SAN over multimode fiber-optic cable at distances of up to 500 meters.

Up to 15 SCSI devices or hosts can be connected to each bus. The bridge is available now for about \$8,000.

ATL: [www.atlp.com](http://www.atlp.com)

**Monterey,**  
continued from page 15

64-bit computing power, was rolled out, there was only one case of application incompatibility.

Monterey may have a greater impact in SCO's UnixWare market, Day says. SCO users may choose to abandon UnixWare and use Monterey to get 64-bit computing as well as its advanced clustering capabilities. "I see a major migration to the combined UnixWare-AIX Monterey technologies," he says.

Other promised Monterey features include support for IA-64 clusters of 32 nodes, up from today's four- to six-node clusters; the ability to handle 32-way symmetric multiprocessing systems, up from today's 16-way systems; and an increase in maximum individual file sizes from 1 terabyte to 8 terabytes.

One user says that he originally feared Monterey would signal PowerPC AIX's demise, but IBM has allayed his concerns, and he has gone ahead and purchased a number of RS/6000s. "We believe PowerPC has a bright future," says Jay Chavez, director of Inter-

net services at UrsusTelecom, a Sunrise, Fla., international carrier with about 500 end users.

Chavez is also interested in the Intel-AIX boxes, which will deliver high-end computing power at a lower price than is currently available.

Part of Project Monterey will be the incorporation of Non-Uniform Memory Access technology from Sequent into the Intel and the PowerPC AIX flavors. However, IBM says that although the software will be ready by sometime next year, it will probably require additional time until the company's server hardware architecture is prepped. ■

## QUICKTAKE

### Low-end appliance handles big caching jobs

Start-up InfoLibria is targeting the enterprise and small ISPs with its new low-end DynaCache Series 20 caching devices. Like the other DynaCache products, the Series 20 devices have lots of RAM and hard disk space and run the caching-optimized DynaCache software.

The DynaCache devices are designed to increase Web page response and lower bandwidth consumption by directing users to a store of Web pages rather than traversing the backbone of the Internet. The idea is to ensure cached content is kept up to date.

The DynaCache 20 has 512M bytes of RAM and 27G bytes of hard disk space. The device supports Ethernet traffic and 16,000 concurrent HTTP sessions, and lists for around \$10,000.

DynaCache 20i, has an intelligent network card that handles the Layer 4 switching function of stripping off non-HTTP traffic so traffic is not sent into the cache. The DynaCache 20i costs about \$15,000.

In a typical network, a DynaCache 20i box would sit between two routers at the edge of the network, intercepting HTTP traffic requests on their way to the Internet. The DynaCache 20 would be connected to a Layer 4 switch, which would, among other things, transparently redirect traffic according to its type to the proper server.

InfoLibria: [www.infolibria.com](http://www.infolibria.com)



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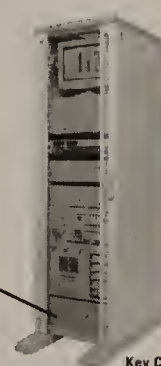
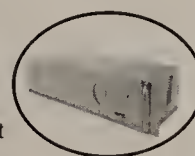
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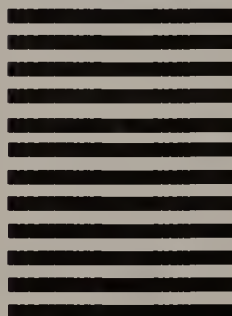
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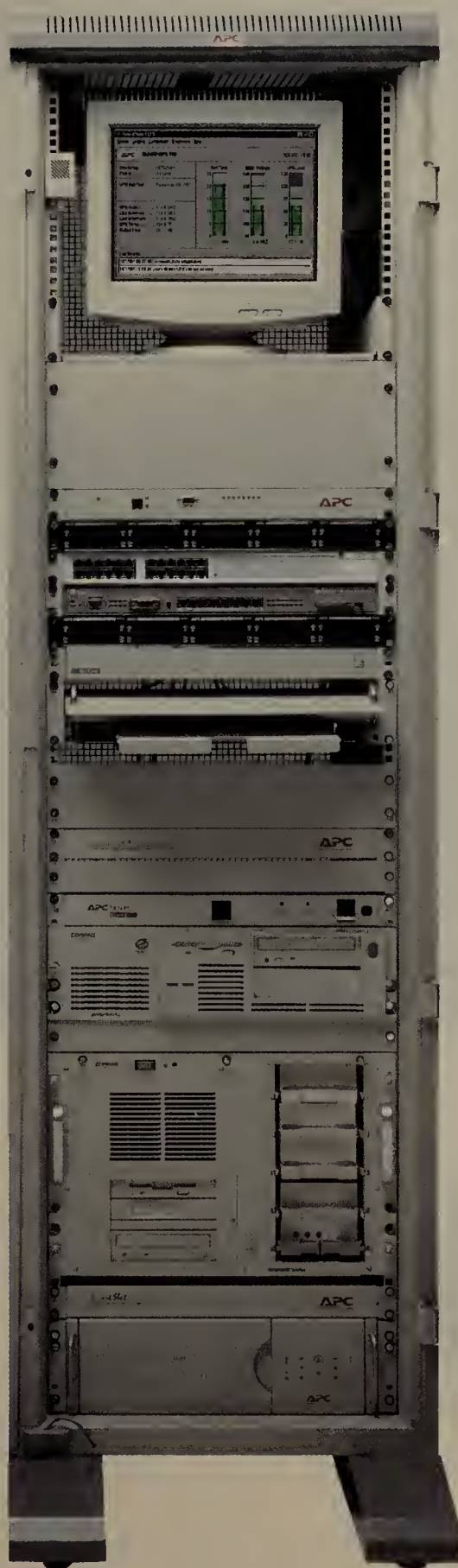
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Internetworking Monitor . Kevin Tolly

## THE WEAKEST LINK THEORY

**F**or as long as I've been testing boxes, vendors have been telling me that I need to consider all the elements that constitute the "end-to-end

solution."

Now that I've launched a major research project on campus quality-of-service (QoS) products, some vendors

are steering me to evaluate just a single box. ("Don't look at our ABC100, the XYZ400 is the one to do the job.") Allow me to respond by offering my Weakest Link Theory of product testing.

Simply stated, my theory posits that the weakest link in an end-to-end package — such as that needed in QoS —

deserves special focus because it is the most likely to fail. An end-to-end QoS offering by definition includes not only powerful core switches, but also the humble edge switch. The capabilities of both need to be evaluated to consider the overall bundle.

A useful approach is to simply assume that the spare-no-expense core switches from different vendors will have roughly similar capabilities. Instead look at what is offered in the edge switch. It is in this price-sensitive area that vendors are likely to cut corners — jettisoning features usually means lowering cost and raising margins. Doing away with fancy QoS features could mean lower research and development costs, lower processing requirements and lower memory needs. Implementing sophisticated QoS support at the edge will likely raise all of the associated costs.

So how valid is it when a "solutions vendor" claims that the company's core switch, rather than its apparently flawed edge switch, should be the primary focus of a QoS study? I say that approach is invalid. Doesn't the performance of both boxes depend upon the sturdiness of the weakest link? If that weak link fails, the whole thing fails. If priority traffic gets clobbered at the edge because of a crude prioritization scheme, traffic will never make it into the sophisticated traffic handling mechanism of the core switch.

Even common sense tells you that edge behavior matters. Few core switch backplanes are oversubscribed whereas most edge switch configurations are.

Most edge switches deployed today are pure Fast Ethernet. The price/performance of Fast Ethernet has made it the de facto standard desktop technology. That fact means countless switches out there are configured with 24 Fast Ethernet client ports and a single Fast Ethernet uplink into the core. This amounts to a 24-fold oversubscription rate on the link into the core. It doesn't take much activity in this configuration to cause congestion and invoke the QoS features.

Some customers might aggregate several Fast Ethernet uplinks to serve as a fractional Gigabit uplink. In the best case, such a switch would be outfitted with a full Gigabit Ethernet pipe. While this improves the ratio dramatically, it still leaves the network manager with a possible 2.4 gigabits of edge traffic vying for a 1G bit/sec uplink.

Today, thanks to low prices for Fast Ethernet network interface cards and switch ports, congestion is more of a concern at the edge than in the campus core. Ironically, the QoS qualities of your inexpensive edge switches may have more impact on your end-to-end service than what takes place at the core.

*Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, NJ. He can be reached at (732) 528-3300, ktolly@tolly.com or www.tolly.com.*

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# Son of Gigabit Ethernet

BY JEFF CARUSO

Ethernet is like a popular movie — the string of sequels is inevitable, and each sequel tries to be bigger and better than the one before. But in the end, it's all the same movie.

Get ready for Ethernet: Episode 4. After Ethernet, Fast Ethernet and the most-recently completed Gigabit Ethernet, the industry is already starting to look ahead to 10-Gigabit Ethernet.

The IEEE has formed a study group to determine the parameters — such as media, distance limitations and even exact speed — for a 10-Gigabit Ethernet standard.

Right now, the study group is debating the technical nitty-gritty, but it hopes to submit a project authorization request to the IEEE this fall so the development of a standard can begin in earnest.

Most enterprise network managers probably think such a high speed is excessive. But each Ethernet speed increase seems excessive when it first comes up. And those embracing Gigabit Ethernet today may have to consider taking the next step in a few years.

In a recent survey of 225 companies, Infonetics Research found that 40% plan to implement Gigabit Ethernet in their network backbones during the next 18 months, with 19% hooking in servers and 9% running the technology to the desktop.

"We even saw a lot of Gigabit Ethernet going into small companies, where they might not necessarily need the bandwidth now," says Mike McConnell, director of enterprise management and LAN programs at Infonetics in San Jose. "But the price points have been coming down, so users are doing some future-proofing." Once those links are in place, companies may find they need to aggregate them into 10-Gigabit lines.

The first customers will be research institutions, which are always pushing the envelope. "I'd like to start field tests of 10-Gigabit late next year," says Michael Bennett, network engineer at Lawrence Berkeley National Laboratory. Bennett presented a user perspective at the study group's last meeting in early June.

The lab needs as much bandwidth as it can get to run virtual reality applications and put together a next-generation supercomputing cluster.

Bennett says the lab is using Gigabit Ethernet today because the technology is less complex than ATM. He would like to see field testing of 10-Gigabit by late 2000.

## This isn't your father's Ethernet

The real drivers for 10-Gigabit Ethernet are service providers, and this represents a fundamental shift for Ethernet. The technology has been primarily a LAN technology, but providers are latching onto Gigabit Ethernet as a less-expensive and simpler alternative to ATM in metropolitan-area networks (MAN).

The influence of WAN-focused companies in the early 10-Gigabit discussions is fueling a debate with-

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**(and MAN) near you.**

## The story so far

Ethernet is the most popular LAN technology, and its use is spilling over into MANs and WANs. While Ethernet frames' format and size remain the same, the technology is evolving in other ways.

Technology	Speed	Full or half-duplex	When standardized
Ethernet	10M bit/sec	Both	1980
Fast Ethernet	100M bit/sec	Both	1995
Gigabit Ethernet	1G bit/sec	Both (but usually used in full-duplex only)	1998
10-Gigabit Ethernet	10G bit/sec	Full-duplex only	Late 2001 (projected)

in the study group over what the technology's exact speed should be. While 10G bit/sec Ethernet is feasible, a speed of 9.584640G bit/sec would match the SONET standard of OC-192. SONET, a standard way of transmitting data in frames over WAN fiber-optic lines, is widely used by telecom companies.

If the speeds were the same, the equipment used to translate between SONET and Ethernet would be easier to use and less expensive, experts say. Plus, the whole network — LANs in different campuses and the network connecting them — could be managed as if it were all in one building.

Another open question is how 10-Gigabit would actually be transmitted along a fiber line. The two top answers are that vendors could use a single, high-powered laser, or four lower-quality lasers multiplexed onto the fiber, says Dan Dove, principal engineer of LAN physical-layer technologies at Hewlett-Packard.

HP demonstrated the latter method at the spring NetWorld+Interop '98 trade show, Dove says.

The demo used four channels, each carrying 2.5G bit/sec of data. The channels were put onto the same fiber using wave-division multiplexing, which uses light to transmit data.

The drawback to the four-laser approach is that HP hasn't yet proven it can make equipment that would be affordable enough for use in enterprise networks. HP hopes to bring the cost down by year-end, Dove says.

A single, more powerful laser might not be cost-effective, either — and it would require temperature controls that the lower-quality lasers don't need, he says.

## Common ground

Some things have already been agreed upon, although it's still very early in the process. One important point that vendors overwhelmingly agree on is that 10-Gigabit will only run full duplex, not half duplex.

This means the new Ethernet will lose one of the fundamental properties of the original. It won't use the mechanism called carrier sense multiple access/collision detect (CSMA/CD), which provides a way for multiple machines to share the same Ethernet segment.

That change won't make for a dramatic transition, however. Although Gigabit Ethernet can support half-duplex operation, virtually no network hardware uses that part of the standard, says Bob Grow, engineering fellow at Intel.

The IEEE study group has also penciled in the distances it will strive for when specifying the cabling for 10-Gigabit. These include 100 meters on installed multimode fiber and 300 meters on newer, enhanced multimode fiber.

For single-mode fiber, three distances are being considered. These reach 2 kilometers for campus networks, and 10 kilometers and 40 kilometers for MANs.

## Future net

As for using copper wiring, that is something that might be considered in the future.

The study group realizes that putting Gigabit Ethernet onto Category-5 cables was a tight squeeze. For 10-Gigabit, the group is contemplating the proposed Category-6 cabling, but it would still take several Category-6 cables to carry 10 gigabits.

Once the details are ironed out, the next step is to submit a project authorization request to the IEEE, probably in November.

Standardization of Fast Ethernet and Gigabit Ethernet took just a couple of years, but the standards process could take a little longer than that for 10-Gigabit, Grow says.

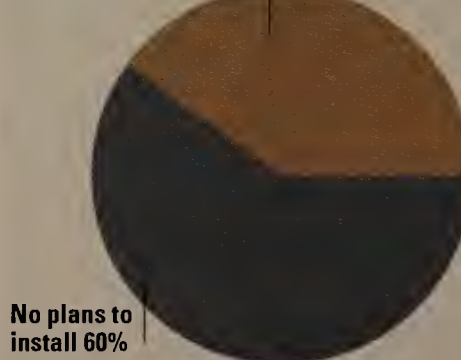
So what's next? You guessed it. "Before we're done with our work on 10-Gigabit, we'll have to start looking at 100-Gigabit Ethernet," Dove says. ▀

## Growing Gigabit networks

With a recent survey showing that many network professionals are already on their way to Gigabit Ethernet networks, analysts say 10-Gigabit Ethernet migrations won't be far behind.

IT managers planning to install Gigabit Ethernet in the network backbone in the next 18 months:

Planning to install 40%



SOURCE: INFONETICS RESEARCH, SAN JOSE



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## Briefs

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While customers will have to sign contracts with the individual companies, customers won't have to negotiate with each carrier. Also, the carriers will work together so customers will only have to file one trouble ticket to get the carriers to respond to a failed link. The two companies can peer into each other's networks to track performance, and customers can view that information via management software.

Bell Atlantic: [www.bellatlantic.com](http://www.bellatlantic.com); Intermedia: [www.intermedia.com](http://www.intermedia.com)

**PSINet** is spreading its European wings with its acquisition of two Austrian ISPs. PSINet last week bought CSO.Net and Netwing for an undisclosed amount. PSINet: [www.psi.net](http://www.psi.net).

The **ASP Consortium** has formed four new working groups to help better define the application service provider market. Last month, the consortium put together the education and outreach, best practices, research and membership committees. The research committee will conduct market and technical research that will be filtered to the education and outreach and best practices committees. The education and outreach group will publish research and white papers on the ASP Consortium Web site. The best practices group will highlight customer success stories.

ASP Consortium: [www.asp-consortium.org](http://www.asp-consortium.org).

## Carriers air wireless 'Net access plans

*GTE, AirTouch services are inexpensive and easy to use, but they max out at 14.4K bit/sec.*

BY DENISE PAPPALARDO

**A**irTouch Communications and GTE Wireless separately have introduced wireless Internet access services that promise simplicity and low cost. But these services are lacking one key ingredient: speed.

nating the cost of a wireless modem (about \$300 to \$500), they sacrifice speed. AirTouch's NetAccess service and GTE's yet-to-be-named service will max out at 14.4K bit/sec. Many business users are used to speeds of at least 28.8K bit/sec with a modem, and many users rely on dedicated connections of up to 1.544M

able in three cities right now — San Francisco, Seattle and Washington, D.C. — the service provider is building out its network using \$300 million from MCI WorldCom.

AirTouch's NetAccess is available in Michigan, Salt Lake City and Seattle. Users will need to buy a digital cellular Qualcomm QCP 860 Thin Phone, which costs \$130 to \$150, to use the service. AirTouch customers won't pay extra to use NetAccess. If a customer has a 500-minute monthly plan that costs \$75, he can use any of those minutes for voice or data.

GTE's service will make its debut this fall in cities in Alabama, California, Florida, Hawaii, Indiana, Kentucky, North Carolina, Ohio, Tennessee, Texas, Virginia and Washington. Users will have to sign up to use GTE's Internet access service. Pricing will not be announced until the service is officially available.

GTE's service will support digital smart phones or personal digital assistants (PDA) that include Web browsers.

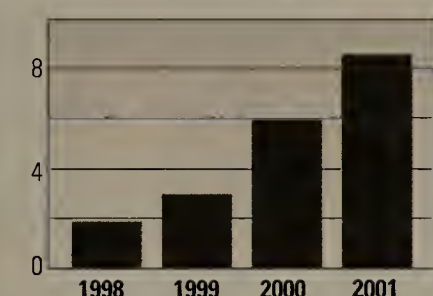
Customers will be able to attach a handset to a laptop or use a smart phone or PDA to download e-mail and browse the Web. AirTouch expects to add support for wireless 'Net access via digital smart phones and PDAs by year-end.

AirTouch: [www.airtouch.com](http://www.airtouch.com); GTE: [www.gte.com](http://www.gte.com).

### Jumping on the wireless bandwagon

**As wireless data service speeds increase and services become more widely available over the next few years, the number of subscribers is expected to more than quadruple.**

Projected U.S. wireless data users (in millions)



SOURCE: CAHNERS IN-STAT GROUP, NEWTON, MASS.

The new services let mobile business users connect to the 'Net with the same cellular phones they use for voice communications. So instead of buying a single-purpose wireless modem, a user can attach his cellular phone to his laptop via a serial cable, then surf the Web, download e-mail or transfer files.

While users can save money by elimi-

End users can now use wireless phones to link their laptops to the Internet.



bit/sec, says Rebecca Diercks, a director at Cahners In-Stat Group in Newton, Mass.

Other services, such as Metricom's Ricochet wireless Internet access offering, require a wireless modem, but operate at higher speeds. Metricom is upgrading its Ricochet service to 128K bit/sec. While Metricom's coverage is only avail-

## DSLnetworks preps virtual net service

BY TIM GREENE

**SAN FRANCISCO** — DSLnetworks is teaming with other digital subscriber line vendors to provide nationwide virtual private networks that could cut WAN equipment and service costs.

DSLnetworks last week announced an agreement with NorthPoint Communications under which NorthPoint will provide the DSL links between customers and DSLnetworks' ATM backbone.

DSLnetworks says it has similar agreements with Covad Communications and Network Access Solutions.

With the DSL-based managed VPN service, DSLnetworks will provide fully

meshed connections among all of a customer's sites. Customers plug their gear into IP ports provided by DSLnetworks, and traffic is carried among customer sites via DSL access links and over DSLnetworks' backbone. DSLnetworks' VPN offering will include a variety of DSL gear, depending on which DSL service partner is supplying connections to customer sites.

A consortium of nonprofit agencies in California's Marin County plans to use DSLnetworks' equipment and services to piece together a DSL-based VPN.

Currently, the consortium has a 120-node frame relay network, but as the group expands, new sites will be connected via a DSL VPN. That will save 60%

on the cost of equipment and up to 20% on monthly WAN service rates, says network administrator Scott McKown.

DSLnetworks has not set pricing for its new VPN service. The offering, which will boast DSL speeds up to 1.5M bit/sec, will roll out in September and is scheduled to be available in 24 cities by year-end.

DSLnetworks: [www.dslnetworks.com](http://www.dslnetworks.com)

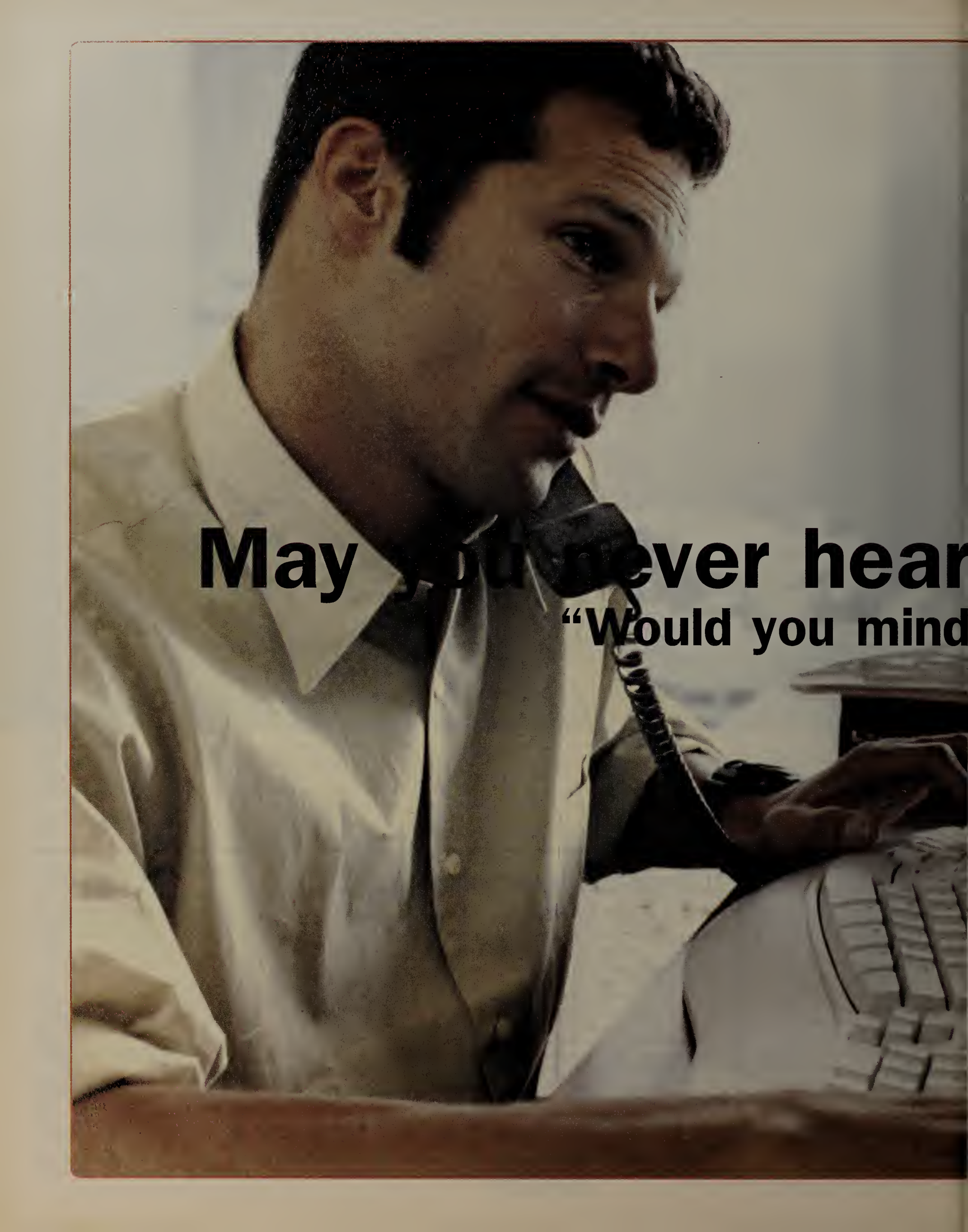
More  
**Online**

**FIND IT**  
DocFinder  
4125  
**ON FUSION**

- A Tech Update on how VPN over DSL works.
- Our free e-mail newsletter on VPNs.

[www.nwfusion.com](http://www.nwfusion.com)



A man with dark hair, wearing a white dress shirt and a light-colored tie, is shown in profile, talking on a telephone. He is holding the receiver to his ear. In the foreground, a portion of a computer keyboard is visible. The background is slightly blurred, suggesting an office environment.

**May you never hear**  
**"Would you mind"**



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## Now with SQL Server 7.0 and Office 2000 you can:

- Use built-in OLAP Services to let users do multidimensional analysis.
- Give users the ability to easily manipulate gigabytes of data using Excel.
- Link Office Web components to give users dynamic views from their browser.





Eye on the carriers . David Rohde

## NOW ON TV: YOUR CARRIER MAKING MONEY

**T**echnology advertising and hype is so ubiquitous and so slavishly analyzed, I thought now might be a good time to look at an underanalyzed area:

carrier advertising on TV.

No, not the old-fashioned cents-per-minute deals from the likes of Candice Bergen and Michael Jordan. I mean the

amazing fact that major carriers are now advertising what are basically enterprise data services right over your boob tube.

Here's the bottom line: If you think

they're advertising high-speed transport, think again. Often what they're going after are the rest of your IT dollars, too.

Don't believe me? Let's take a look at Exhibit A, AT&T's "net.working" ads, featuring people meant to represent you, the network executive.

The original net.working ads were hard to take. Under some rather ominous music, the ads depicted network professionals who always seemed to be holding their heads in their hands, trying to stave off one disaster or another.

But one of the newer ads is a little more optimistic — and a lot more telling. Under the same music, a network professional paces around, musing that he worries too much. Then he brightens up because he realizes he — or rather, his carrier — has successfully merged two bank networks: "AT&T nailed that."

Now he implies AT&T is going to build and run some sort of optimized network (perhaps including the applications) to help the company brave the new world of electronic commerce. That causes him to really brighten up. He moves to lean over his PC, gazes at what we might imagine to be an upwardly sloping sales chart, and boasts: "Our revenues are going to go sky-high. I like worrying about that!"

This, in a nutshell, is the recurring vendor fantasy of a customer who has — or believes he has — absolutely no expertise in the vendor's field and only wants to concentrate on his own business.


That's a particularly compelling theme with the legacy carriers these days. Why? Ironically, partly because of all the damage that Candice, Michael, Whoopi and the rest have done to telecom profit margins. Two years ago, AT&T was still advertising a flat 15 cents per minute plan to consumers. Now Sprint and Qwest have some plans at 5 cents per minute, and by next year, some of the asterisks around those plans may drop away because of furious competition and federal policy lowering local access rates.

What to do? Turn to the moneybags — you, the corporate user. What the AT&T net.working ads are all about is not just frame relay, ATM or IP, but managed frame relay, ATM or IP. Transport charges only make money at the margins these days, but professional services fees — a few hundreds bucks per site, per month, every month for a multiyear term contract — are music to the carrier chief financial officers' ears.

The problem is, if corporations really don't know anything about WANs, why do they keep hiring WAN managers who spend half their time unraveling the problems the carriers cause? Hmmm... I guess the corporate network professionals haven't seen the commercials.

*Robde is a senior editor with Network World. He can be reached at [drohde@nww.com](mailto:drohde@nww.com).*

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## Briefs

Sendmail, the most widely used software for managing e-mail messages over the Internet, will now support two key e-mail standards — Post Office



**New arrangement gives Sendmail POP and IMAP support.**

Protocol (POP) and Internet Message Access Protocol (IMAP) — under an arrangement announced today between Sendmail of Emeryville, Calif., and Messaging-Direct of Edmonton, Alberta.

Sendmail offers a commercial version of the popular open source software of the same name that routes e-mail messages from one network to another.

MessagingDirect sells complementary software that stores e-mail messages on a local server and supports common e-mail standards so users can access messages through a variety of desktop e-mail packages.

Under the terms of the agreement, Sendmail will embed the message store and message access modules from Messaging-Direct into the Sendmail Pro message transfer agent. The combined product will be targeted at corporate customers and ISPs.

Sendmail: [www.sendmail.com](http://www.sendmail.com)

The Bank of Bermuda says it will issue digital certificates to its corporate banking clientele to securely access accounts and portfolios over the Internet instead of using more costly dial-up services. The bank plans to use Entrust Technologies' Public-Key Infrastructure 4.0 software so bank customers can encrypt and digitally sign mail, as well as gain access to Web servers for transactions.

## Instant messaging to hit enterprise

*Businesses being pushed to offer instant messaging to employees hooked on the technology at home.*

BY CAROLYN DUFFY  
MARSA N

Long viewed as a novelty, instant messaging systems that let users chat in real time with select individuals are gaining ground as no-nonsense tools for businesses with remote workers. And rather than just comple-

menting e-mail communication, instant messaging is often replacing telephone conversations.

Corporate use of instant messaging is still small, but it is growing at a steady clip, according to analysts and companies selling the software. In many cases, businesses are being pushed to offer instant messaging services to employees

who are hooked on it at home.

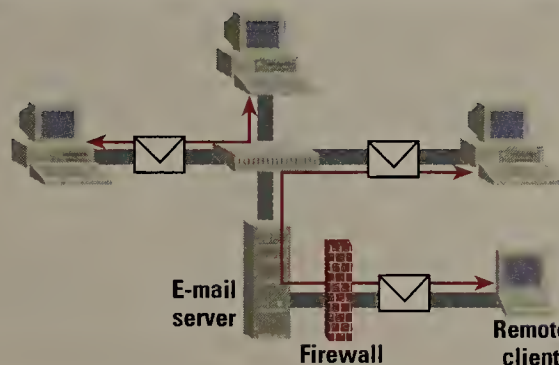
"When instant messaging started to become available from vendors like Lotus, we began to see the technology being used as a business tool," says Amy Wohl, an industry analyst in Narberth, Pa. "Business users have been slow to adopt instant messaging because it has such a consumer taint. But there's a real utility for it, particularly for people who have continuous network connections," says David Strom, a 'Net consultant in Port Washington, N.Y. "E-mail works great for notification, when you don't care about the timeliness of the information. . . . But the nice thing about instant messaging is that it really is instantaneous."

Just ask John Dial, a product developer with BMC Software, who swears by the technology. Dial uses an instant messaging package from Activerse, called

See **Instant messaging**, page 34

Instant messaging:  
Right to the source

Instant messaging software allows client PCs to talk directly to each other using PPP. The only time an e-mail server is needed is for communication with remote clients.



## Start-up's 'decoy' server helps track down hackers

BY ELLEN MESSMER

**PALO ALTO** — Start-up Recourse Technologies this week will release software, dubbed ManHunt, that can record would-be hackers' activities and trace intruders back across the Internet.

ManHunt serves as a "decoy" server — a convincing mock corporate Web site — that hackers can be led to once they break into a company's network. Once hackers break in, they can rummage around the decoy server and steal data, which, unbeknownst to them, is fake. ManHunt records the hacker's activities, providing the IS department with a detailed record of the event that can be used to track down and prosecute intruders in court.

## Break-in leads to brainchild

Recourse is the brainchild of company founders Frank Huerta and Michael Lyle, network engineers forced to cope with an embarrassing hacker break-in while employed with service provider Exodus Communications. After reporting the network break-in to the FBI's computer crimes division,

Exodus learned a lot about what law enforcement needs to successfully prosecute an intruder in terms of an event log, proof of stolen files and a network trace.

According to Huerta, now president and CEO of Recourse, simply trying to break into a network by probing isn't considered a crime.

Authorities also have a hard time bringing a case if all they see from an event log is that someone broke in but only looked around because there's no evidence of malicious intent or theft.

After the Exodus break-in, Huerta and Lyle, now Recourse chief technology officer, put together what they called a "spoof-box" at Exodus — with the goal of capturing more useful data for legal purposes. When Exodus-

managed firewalls — in this case, those from Check Point, Cisco and Raptor — recorded suspicious activity, the traffic was redirected to the spoof-box.

With this idea, Huerta and Lyle left Exodus to start their own venture capital-backed firm to develop spoof-box into the ManHunt product, which ships Sept. 1 for \$3,500.

Their formation of the new company transpired with the blessing of Exodus, See **Hackers**, page 34

PROFILE: RECURSE  
TECHNOLOGIES, INC.

Frank Huerta Michael Lyle

Founded:	February 1999
Headquarters:	Palo Alto
Primary product:	ManHunt, a decoy server for nabbing would-be hackers.
Employees:	10
Founders:	Frank Huerta, president and CEO; Michael Lyle, chief technology officer.
Management background:	Huerta and Lyle were formerly security specialists at Exodus Communications.
Funding:	Undisclosed amount from Dixon Doll Capital Management.





If you think the Autobahns are fast, wait till you try





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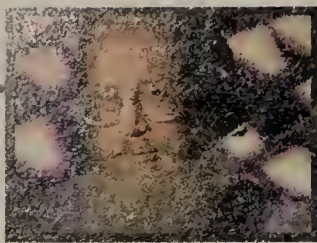
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'Net Insider . Scott Bradner

## HISTORY IS PRELUDE

It has been an interesting few weeks for anyone who is a fan of freedom.

U.S. Attorney General Janet Reno was quoted as wanting to control the distribution of encryption software via the Internet. The FBI is blocking a license that would let a small Canadian satellite telephone company sell phones to U.S. customers because the FBI cannot wiretap (if that's a proper term in this context) conversations over satellite.

*The New York Times* reported that the Clinton administration is planning to install a vast computer communications monitoring system ostensibly aimed at protecting government computers. The same administration also defended the new International Public Information System as targeting only foreign audiences in its aim to influence peo-

ple to support U.S. foreign-policy objectives.

I guess "interesting" understates all this recent news quite a bit. The administration claims it is concerned with the privacy and rights of individuals. But its actions continue to be indistinguishable from the actions a repressive government would take to violate those rights. Maybe when the Clinton administration says it is concerned, the administration means it worries that citizens have too many rights.

I was getting increasingly depressed by reading the headlines, so I decided to reread a neat little book on the history of the telegraph that was published last year. *The Victorian Internet* by Tom Standage starts by telling of an experiment performed in 1746 involving 200 monks, each connected to the next with a 25-foot-long piece of wire.

Jean-Antoine Nollet, a French scientist, then gave the chain of monks a high-voltage shock and listened to the reaction of the monks to see how fast electricity flowed. The book ends in 1885 with the observation that "a great future is in store for the telephone."

Unfortunately, I was unable to get as far from today's headlines as I would have liked. A lot of the issues we are now faced with regarding the Internet first showed up with the introduction of the telegraph. Encryption was an issue with the early telegraph and was banned by many governments. The telegraph turned out to be so successful that serious congestion problems developed, some of which were relieved by the introduction of alternative transport technologies, such as pneumatic tubes. Large monopolies developed, as did new government-

managed standards organizations. Criminals quickly learned how to commit long-distance fraud, and corrupted messages caused significant monetary losses. Security also became a major issue. Britain even built a private worldwide telegraph network to connect parts of the empire.

I recommend the book mentioned above, but caution that even though it is an enjoyable read, there is too much prologue in this history for the book to be a pure escape.

Disclaimer: With six Harvard alumni becoming U.S. presidents, Al Gore can only hope that history is prelude. But the above review is mine.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.*

### Instant messaging, continued from page 31

Ding, to communicate with the six other members of his software development team who are located in Houston and Austin.

"We use it for answering quick questions, where we would otherwise use the phone," Dial says. "We also use it to transfer files because it's a lot cleaner than sending something as an e-mail attachment."

Another benefit of Ding is that it helps one of his team members, who telecommutes, stay in constant contact with co-workers.

"I don't even know her phone number anymore," Dial jokes.

### An academic use

Randy Vaughn, an IS professor at Baylor University, uses a competing product called PowWow for Private Networks from Tribal Voice to stay in touch with his students outside of the classroom.

"Instant messaging serves as a medium for short-burst communications, which my students use to find out if I am in my office or to schedule a conference," Vaughn explains. "My students spend a lot of time using computers at home or in our computer labs, so phones or short walks are not always convenient. Instant messaging is also less intrusive than phone calls and can be less stressful for a student than a visit to a professor's office. So instant messaging serves a very useful

purpose."

"What instant messaging does is bridge the gap between e-mail and the telephone," says Paul Haverstock, general manager of Lotus' Sametime product.

Haverstock says the technology is particularly useful for sales teams, who can use it to get immediate answers to customer questions without having to resort to the telephone. It also is used by worldwide organizations such as The BOC Group, a British firm that relies on the technology to host virtual meetings among its executives in 50 countries, and WestSphere, a New York equity investment company that specializes in South America.

### Taking off this year

Companies that sell instant messaging products as well as industry analysts predict this is the year for instant messaging technology to take off in the enterprise. Market research firm International Data Corp. estimates there will be 13 million corporate users of real-time data conferencing software, including instant messaging applications, by year-end. That number is expected to rise to 36 million users by the end of 2003, according to Mark Levitt, research director for collaborative computing.

The technology has already reached critical mass among consumers, says Richard Dym, vice president of marketing at Tribal Voice. "IT departments are going to be hearing from their users

that they have these capabilities at home and they want them at work," he says.

With five million users of its consumer service, Tribal Voice last week started shipping its first corporate product, PowWow for Private Networks. Because the product uses peer-to-peer communications, PowWow for Private Networks will not be a drain on corporate network bandwidth, Tribal Voice officials claim. Because the software runs behind a company's firewall, Tribal Voice's offering will not open up security risks.

Lotus also is touting the security advantages of its Sametime instant messaging product, which runs behind a company's firewall and offers message encryption. In addition, Sametime can be integrated with a company's e-mail directory for ease of administration. Originally released in January, Sametime was upgraded last month to include an instant meeting capability for multiple users. ■

### Hackers, continued from page 31

which is beta-testing ManHunt in order to offer it as part of a managed security service, similar to the service provider's existing managed firewall service.

The ManHunt software sits on a Unix server on a LAN or Internet access point where a protective firewall would be able to hand off suspicious traffic to the decoy server.

### Some limitations

As a first-generation product, ManHunt has some limitations that Huerta readily acknowledges. The software can track hackers back across different carriers' networks, but the process is still overly manual.

An important note: ManHunt only intercepts an attack when the attack is launched against a service or port protected by a firewall.

This means ManHunt will be most useful sitting behind a firewall guarding the door to an intranet. ManHunt won't be as effective shunting would-be hackers off public Web sites.

Next year Recourse plans to release TipOff, host-based software that delivers bad news.

"Hackers typically know how to cover their tracks, they're often very good at it," Huerta says. "But TipOff will tell if you have been hacked."

Recourse: [www.recoursetechnologies.com](http://www.recoursetechnologies.com)





# Technology Update

An Inside Look at the Technologies  
and Standards Shaping Your Network

## Ask Dr. Intranet

By Steve  
Blass

We use a  
Cisco Catalyst  
5500 switch with  
168 ports assigned  
to a virtual LAN.  
I configured the  
SPAN port to moni-

tor the VLAN and then attached  
a sniffer to the SPAN port. To  
my surprise, the traffic was  
very high at times, bursting to  
100% utilization. Besides the  
high traffic, I'm receiving ex-  
cessive broadcast storms and  
retransmissions. Our intranet  
users have not reported any  
network problems. Any sugges-  
tions or recommendations?  
Via the Internet

Mapping 168 VLAN ports to  
a single Ethernet port and  
watching the traffic with a  
sniffer could be giving you an  
inaccurate picture of the traf-  
fic on your intranet. The utiliza-  
tion you are seeing is every-  
thing on the VLAN piped into  
your SPAN port, which may be  
10/100Base-T at half or full  
duplex. Seeing 100% utilization  
in this situation should not  
cause alarm because the  
switch fabric is designed to  
handle gigabit traffic and can  
easily outrun the single port  
through which you are moni-  
toring traffic.

The broadcast storms may  
result from analyzing the entire  
VLAN at once. Instead, you  
could use SNMP or Remote  
Monitoring (RMON) to monitor  
the switch and its ports. You  
might try a free SNMP/RMON  
monitor for Windows at  
[www.compaq.com/support/  
files/networking/software/Comp  
aq\\_Network\\_Management\\_  
Software.html](http://www.compaq.com/support/files/networking/software/Compaq_Network_Management_Software.html). The monitor can  
export information to Excel.

Blass is a network archi-  
tect at Sprint Paranet in  
Houston. You can reach him  
at [drintranet@paranet.com](mailto:drintranet@paranet.com).

## How to's of mixing token ring, Ethernet

BY FRANK WHITTEN AND  
JAY COWAN

Whether the result of a cor-  
porate merger or a simple  
need for speed, melding  
token-ring and Ethernet networks can  
present a variety of coexistence and  
migration challenges.

However, use of the Inter-Switch Link  
(ISL) protocol can minimize the complex-  
ity and inconvenience of a gradual token-  
ring-to-Ethernet migration. The end result  
is a media-independent corporate back-  
bone capable of carrying both protocols

of 1,500-byte data frame size are applica-  
ble. Therefore, ISL can be used to transport  
the far-larger 18K-byte token-ring frames  
(or alternatively, 100-byte packets). And  
because ISL is based on Ethernet technol-  
ogy, Fast Ethernet Category 5 copper  
cabling or fiber-optic cabling can be used  
as a transport medium, allowing speeds of  
100M bit/sec or even gigabit speeds  
between switches and to servers.

An ISL frame consists of three primary  
fields: header, the original packet and a  
frame checksum field. The header is fur-  
ther divided into fields that identify the  
type of frame being encapsulated, the

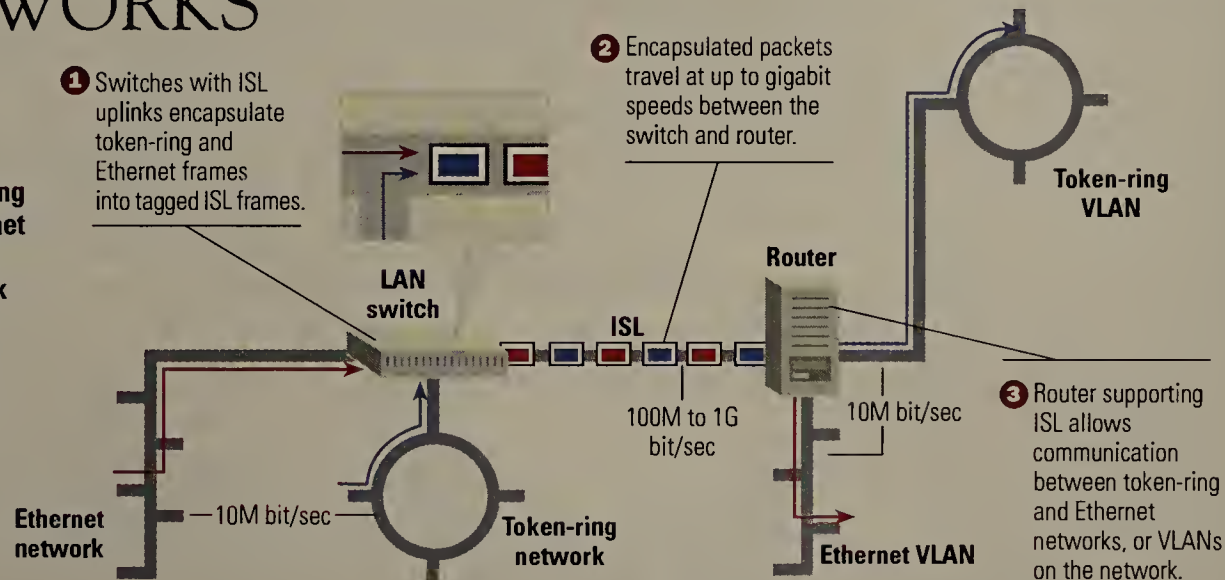
to existing token-ring or Ethernet end sta-  
tions, applications, protocol stacks or  
source-route bridges to take advantage of  
the Fast Ethernet or Gigabit Ethernet  
backbone. Clients and servers continue to  
use token-ring and source-route bridged  
protocols without change, minimizing  
implementation cost and protecting  
installed base investment. No ring seg-  
ment renumbering is required.

LAN switches with ISL uplinks provide  
high-speed switching from multiple  
token-ring and Ethernet segments and  
VLANs across the ISL backbone, without  
the need to introduce ATM switches and

## HOW IT WORKS

### A typical Inter-Switch Link configuration

ISL is a way of encapsulating  
tagged token-ring or Ethernet  
frames and transporting  
them over an Ethernet link  
at up to Gigabit Ethernet  
speeds. Using ISL can  
reduce the complexity of  
a token-ring-to-Ethernet  
migration.



at switched fabric speeds right down to  
the server. ISL deployment can also open  
the door to virtual LANs and helps with  
the amortization of token-ring equipment.

ISL is a method of encapsulating tagged  
LAN frames and transporting them over a  
full-duplex, point-to-point Ethernet link.  
The encapsulated frames may be token-  
ring or Fast Ethernet, and are carried  
unchanged from transmitter to receiver.

Because ISL carries data hop-by-hop  
over point-to-point links, neither the Fast  
Ethernet nor Gigabit Ethernet constraints

VLAN to which the frame belongs and  
process management information.

As the name implies, Inter-Switch Link  
is normally used as a backbone tech-  
nology between network switches and/  
or between the switch and a server that  
is equipped with a special token-ring-  
enabled ISL adapter card. Encapsulation  
and "de-capsulation" occurs within the  
switches at both ends of the backbone  
link, or within the server using special  
software. The simplicity of this approach  
means that no new hardware or software  
is required on workstations.

Before the advent of VLANs, client/  
server broadcasts on a flat LAN literally  
brought slower PCs to a halt. Flat LANs  
were also plagued with access, security  
and troubleshooting issues. To address  
these problems, VLAN partitioning was  
implemented to break up the net into log-  
ically separate affinity groups. The ISL  
header carries the complete identification  
of the token-ring or Ethernet VLAN.

Implementing ISL requires no changes

LAN Emulation. Servers using token-ring-  
enabled ISL network interface cards allow  
simultaneous access to common servers  
by token-ring and Ethernet clients via the  
same ISL link. Attaching routers via a sin-  
gle ISL connection allows communication  
between token-ring and Ethernet nets or  
between VLANs on the same net.

At a pace that makes business sense,  
client workstations can be migrated from  
token ring to Ethernet. As new PCs arrive  
with integrated Ethernet adapters, these  
users have instant access to the same re-  
sources as when they were attached to  
the net by token ring. ISL-attached servers  
can pump data at 100M bit/sec (or 400M  
bit/sec using Fast EtherChannel) to  
token-ring and Ethernet client requestors.

Whitten is product manager of token-  
ring switching at Cisco. He can be  
reached at [fwhitten@cisco.com](mailto:fwhitten@cisco.com). Cowan is  
product marketing manager at ZNYX  
Corp. His can be reached at [jay.cowan@  
znyx.com](mailto:jay.cowan@znyx.com).

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[pmcnamara@nww.com](mailto:pmcnamara@nww.com)



Gearhead — inside the network machine . Mark Gibbs

## HOUSEKEEPING FOR TRACEROUTE AND INSTANT MESSAGING

**G**earhead has a little house-keeping to do: To wit, wrapping up the discussion of traceroute (NW, July 12, page 42).

A number of you wrote to argue that traceroute doesn't use Internet Control Message Protocol (ICMP) echo commands as Gearhead claimed. For example, astute and informed reader Michael Borowiec wrote pointing out that the original author of traceroute, Van Jacobson of Lawrence Berkeley Labs, included the following comments in the source code:

"Probe packets are UDP format. We don't want the destination host to process them so the destination port is set to an unlikely value (if some clod on the destination is using that value, it can be changed with the -p flag)."

Borowiec went on to note that, "Probe packets are sent to UDP ports starting at 33434, incrementing by 1 for each hop, up to 30 hops (by default, ending at 33464). Here's the declaration for the starting port number: u\_short port = 32768+666; Curious how the author . . . derives the starting port number as 32K plus the number of the Beast!"



This was an interesting observation on the numerological significance of port assignments and how ports are used. And the reader is quite correct: Unix systems do indeed use only UDP packets, and I did neglect to mention this.

It turns out that the use of ICMP echo requests is a Microsoft perversion implemented in the version of traceroute the company calls tracert. Microsoft's reason for the use of ICMP over UDP can only be guessed at, but the theories could probably keep the Justice Department busy for another year or two.

Amazingly brainy reader Allen Robel noted, "What [Microsoft] has done is not bad, just different. The difference is important to know about

though, since you may get varied results depending on [whose] implementation you use. For example, differences may be observed when traversing firewalls, or [quality-of-service] capable switches, depending on how these are configured."

Another reader, the excellently informed Ron Atkinson, pointed out that there are some consequences to this difference in how routers respond:

"You'll notice the ones that don't report . . . are the newer routers that connect different backbones. For the past 10 years that I've run TCP/IP, all the routers have always reported back. If you run 'tracert' you'll notice some don't report, but quite often (not always though) the missing routers will report when you do a 'traceroute'."

Atkinson also points out that another reason some routers don't respond is many ISPs configure their routers so ICMP echo requests are a very low priority.

"You might ping a router sometime and have something like 128 msec round-trip, then you ping a computer behind the router and have

a 60 msec round-trip," he says.

As if that weren't enough, Atkinson also says that firewalls and packet filters may make routers "nonpingable" from outside the network to prevent hackers from performing denial-of-service attacks.

So there you are, the final clinical details of traceroute. Don't you feel a better person? Fresh like as a mountain spring? OK, so it's been a long week.

Another issue that Gearhead would like to mention is Backspin's recent comment on the instant messaging fracas (NW, Aug. 2, page 54). The column read, "I'd love to see the Internet Engineering Task Force or the World Wide Web Consortium get ultradynamic and get involved."

That made it sound like there's nothing that either group is doing. Actually, the IETF has a proposal on the table ([www.ietf.org/html.charters/impp-charter.html](http://www.ietf.org/html.charters/impp-charter.html)), but to be fair to Backspin, it is still a long way from the marketplace.

*Route messages instantly to [gh@gibbs.com](mailto:gh@gibbs.com).*

## NetworkWorld Fusion Spotlight

News, tips and tools from our Web site

### Taking a load off

In their last column, the techie geeks at Motley Fool discussed load balancing and why they settled on F5's BIGip for their big Web site. This week, they dive even deeper into the topic, taking a look at distributed load balancing. The technology can help keep your site up if a server goes down and gives you the ability to quickly add Web oomph when the traffic goes up. But as they explain, there are some

sites for which the technology is a bad idea. Find out if distributed load balancing is right for you or if you should look at outsourcing the whole issue to the new breed of caching network providers.

*DocFinder: 4126*

### He's FID up

Michael Cooney, associate news editor at Network World, doesn't understand the government's proposal for a network to detect hackers and

other intruders. Surely the government has better things to waste its money on, he writes in this week's Water Cooler (you know, the weekly opinion by Network World editors and reporters). After you've read his column, drop by our FIDNET forum to discuss the proposal or follow our links to more information on it.

*DocFinder: 4128*

### Help Desk

A reader wants to know how many concurrent dial-in connections an ISDN router can support and how to connect it to the rest of his network. See what Help Desk Editor Ron Nutter suggests. And if you have any suggestions, don't hesitate to add them.

*DocFinder: 4132*

### Career Doctor

Kindly Doc Shaun Kelly

returns with a look at the "behavioral" interview. No, it's not to decide whether you're a bad boy or girl, but a type of interview companies often give job applicants to see how well they'd fit in with the existing staff and workplace. Bone up with his guide to the most common types of questions asked in these interviews.

*DocFinder: 2729*

### Honesty in advertising

You never know what you'll find on IBM's AlphaWorks site, where IBM posts its early Java code. We recently ran across the following (thanks to Mark Gibbs): "ClassBroker for Java is a lightweight ORB for Java applications that enables idiot-level users to develop, deploy and maintain distributed Java programs."

Refreshingly honest. What's the best vendorspeak you've

seen? Jump into our forum.

*DocFinder: 4133*

### Vendor Web sites

You just can't avoid 'em these days. Where else are you going to get the latest patches or specs on the new switch you want? But which sites are the easiest and most useful? We're compiling a list of the best vendor sites for a special issue this fall. Let us know which sites you think are great in a quick online survey.

*DocFinder: 4130*

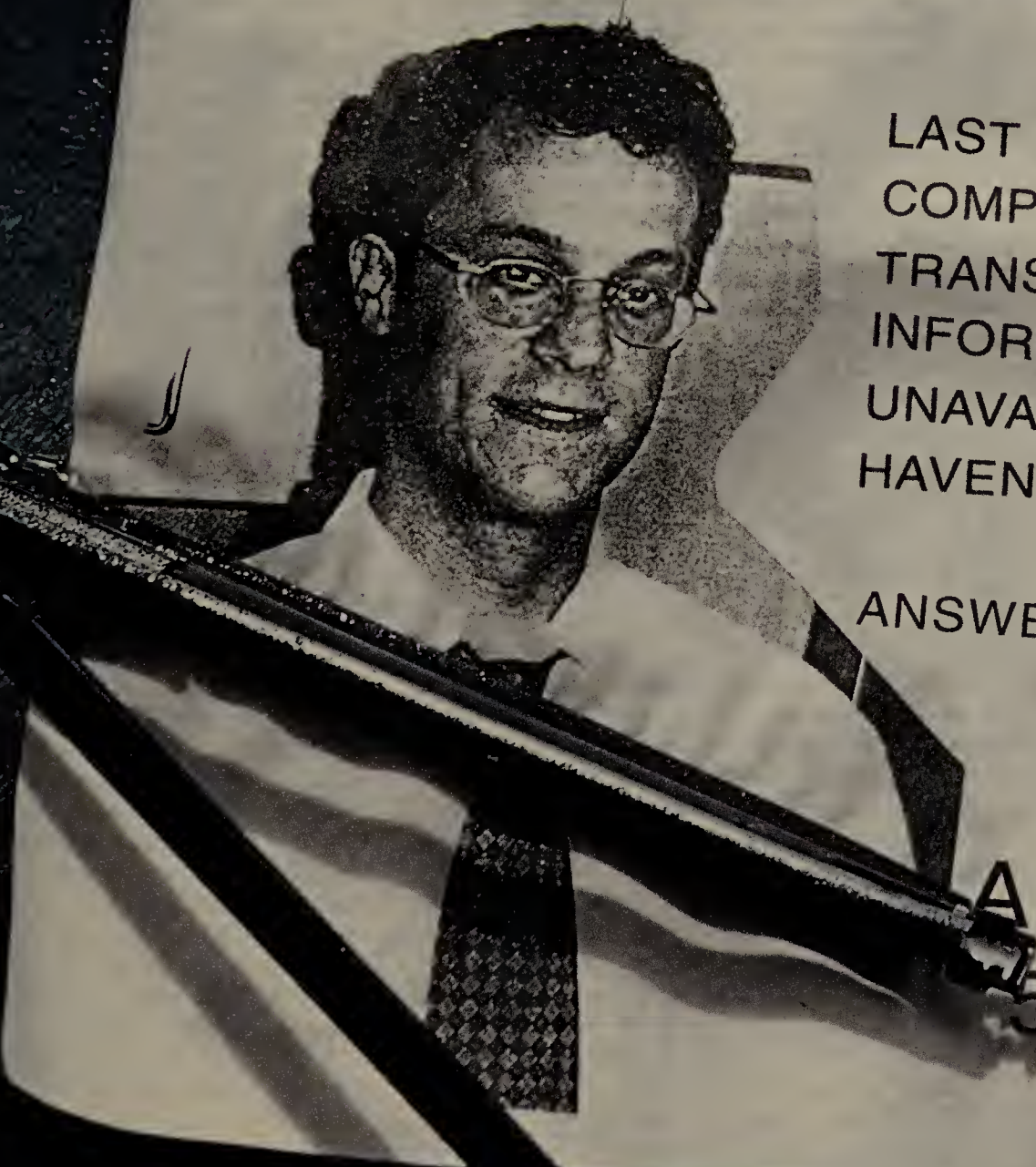
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## Editorial Insights

### An all-star lineup for our Convergence Showdown

Three weeks ago, I challenged 3Com, Cabletron, Cisco, Lucent and Nortel Networks to take part in Network World's Convergence Showdown at NetWorld+ Interop next month. I'm happy to report that these enterprise network rivals all

rose to the call of duty. They've committed to sending a top technical executive to this presidential-style debate aimed at getting past the hype to find real strategies and applications for converged enterprise nets.

From 3Com, we'll have Bob Roman, director of business development and emerging technologies. Cabletron is sending Romulus Pereira, chief operating officer, while

Cisco is sending Marthin DeBeer, a director overseeing Cisco's enterprise convergence strategy. From Lucent, we have Karyn Mashima, strategy vice president and chief technical officer, and Nortel has committed T.J. Fitzpatrick, president of voice solutions/enterprise solutions.

I left a slot open for an enterprising start-up, and after hearing from a number of readers, I've asked Scott Pickett, chief technology officer and co-founder of Vertical Networks, to join the fray. Vertical is taking an interesting approach to voice/data integration by handling convergence at the switch and letting traffic run over separate wiring infrastructures.

Pickett has promised to give as good as he gets from our lineup of tech experts, and that's what the showdown format is designed to encourage. We get past the slides and standard corporate positioning statements to get real answers to tough questions.

Our vendor executives will first face questioning from a panel of industry experts who've heard all the convergence hype and know the holes in vendors' stories. Our experts panel includes *Network World* Senior Editor and showdown veteran Jim Duffy; Jim Metzler, a principal of Ashton, Metzler and Associates, and host of *Network World's* State of the WAN seminar tour; and Kevin Tolly, president of The Tolly Group and master of ceremonies for our State of the LAN seminars.

After dealing with the experts panel, we'll let the vendors go after one another with their own questions and, finally, we offer them up to the audience for further questioning.

Join us in Atlanta for the Convergence Showdown, which will be held from 12:30 p.m. to 2 p.m., Tuesday, Sept. 14, in Ballroom 1 of the Georgia World Congress Center. See you there.

— John Gallant  
jgallant@nww.com



Message Queue

### BAD DREAMS

Regarding your story "NT nightmares" (July 12, page 1):

The tragic Windows NT experiences people are reporting suggest that it is the skill of the administrator that really counts when dealing with any network problem. It may be the lack of detail in the story, but reading some of the users' tales makes me think their problems could have been solved by good administration and a knowledge of network basics.

Regarding the engineer who had subnets disappearing from Network Neighborhood, any good NT administrator would know that the problem is related to name resolution. Look at the browser selections or Windows Internet Name Service (WINS) and you can solve the problem within days, if not hours, rather than months. Regarding the administrator who had trouble with Service Pack 2, installing untested service packs in the last hours of the day is a bad administrative practice. Looking at what had to be done to bring the server back to life, I wonder whether the operating system really had to be completely reinstalled; it's possible to roll back the machine to its previous configuration using several methods, or at the very least, save the user accounts.

To be fair, the WINS problems reported by Shell Services do sound very possible, and it is true that replication has never been particularly elegant. At least in that example, it seems there were no fundamental judgment errors made in handling the problem.

I agree that NT has many shortcomings, but far too often it is lack of administrative skill and troubleshooting experience that causes problems.

Misha Gousshteyn  
Director of advanced technical services  
Insync Internet Services  
Houston

I do not work for Microsoft, I do not own Microsoft stock and I have my fair share of complaints with the company. I understand people having problems with products. But when a user tries to

print a spreadsheet and keeps getting blank pages out of the printer, I don't write hate mail to Hewlett-Packard and Lotus.

I am truly amazed at what appears to be a lack of competence in the computer maintenance business. Who on earth loads a service pack for a network operating system without testing it on an isolated system first? Does anyone besides myself do anything g-r-a-d-u-a-l-l-y in this business?

Before I deploy a new server, it runs a minimum of two weeks in my office, on the floor. Everything — from automated backups to the cleanliness of the case — is tip-top before it goes live. If I'm going to load new software such as a service pack or upgrade, I do it on a weekend and have a backup handy. It boggles me to know there are daredevils who install Windows 2000 Beta 3 on a live server. Here, would you like some bad RAM chips and a flaky hard drive, too?

Call me old-fashioned, but shouldn't the media be somewhat impartial? Where are the articles on "NetWare Nightmares" and "Unix Nightmares"?

Christian Rekowski  
Network administrator  
Colonial Oil Industries  
Savannah, Ga.

### ALTERNATE ROUTE

Regarding Mark Gibbs' "Gearhead" column "The inner workings of traceroute" (July 12, page 42):

What Gibbs describes is the way Microsoft implements its version of traceroute, actually called tracert. The tracert program uses Internet Control Message Protocol (ICMP) echo request packets.

Traceroute, on the other hand, uses User Datagram Protocol (UDP) echoes. UDP packets, not ICMP echo requests, are sent to the host. The UDP packet is sent to a high port, up to the 30,000 range, and the time-to-live is incremented exactly as Gibbs describes. So just replace ICMP echo request with UDP and this is how a real traceroute works.

Ron Atkinson  
Software engineer  
Computer Task Group  
Clinton Township, Mich.

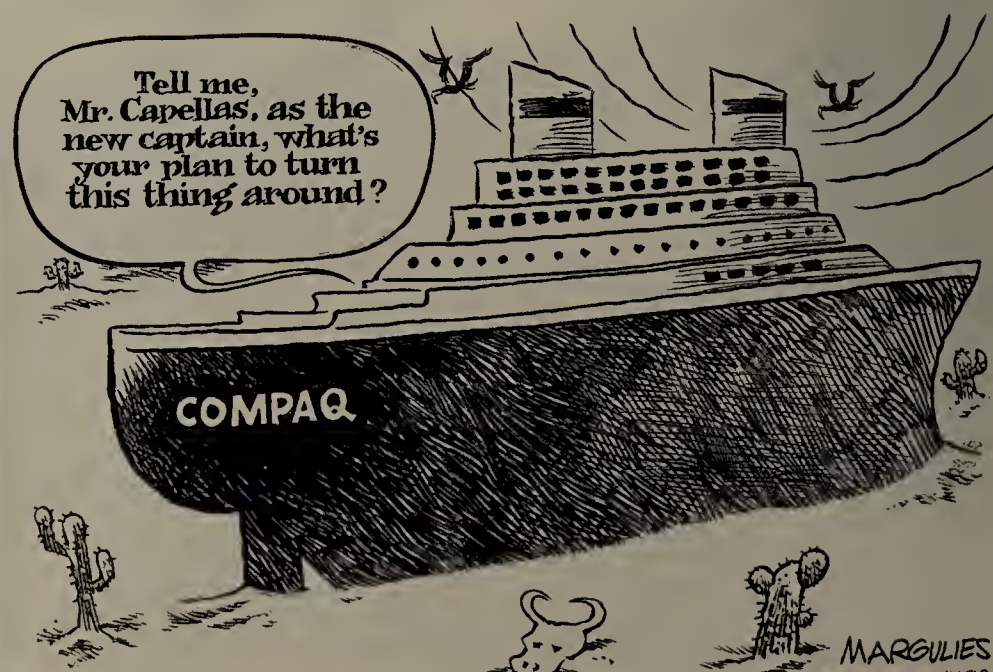
Send letters to [nwnews@nww.com](mailto:nwnews@nww.com) or John Gallant, editorial director, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

More  
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- Letters about NT nightmares and other topics.

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## GOOD OFFENSE IS BEST DEFENSE AGAINST BACK ORIFICE

**T**he Cult of the Dead Cow has done a marvelous publicity job. Before Back Orifice 2000's release, the Internet hummed with speculation. The good news is that this new code represents only a small incremental step in PC attack capability. Back Orifice 2000 doesn't exploit vulnerabilities in Windows; it exploits vulnerabilities in your people.

Programs such as Back Orifice create backdoors on Windows PCs. A component runs in the background, waiting for a TCP connection. A remote graphical user interface (GUI) client can start and stop applications; delete, copy or change files; capture keystrokes; dump the screen; and even monitor an attached video camera or microphone.

Although a self-replicating backdoor is likely — especially given the availability of Back Orifice's source code — such hostile code, or "malware," has not yet appeared. Most backdoor infections are in the form of Trojan horses. Screen savers, video games and greeting cards are common on the 'Net, but sometimes a double click results in a surreptitious hostile code installation.

Backdoors listen patiently for connection requests. Their convenient GUI management interfaces can scan a range of IP addresses, automatically finding exploitable hosts. Virtually every IP address reachable on the Internet is regularly scanned.

Firewalls aren't a cure-all for malware. They can reduce successful connection attempts, but hostile code that connects back out from inside a firewall is becoming more common.

Fortunately, while covert code continues to proliferate, effective countermeasures do as well. No single countermeasure is adequate in isolation, but a multi-pronged approach involving careful systems management and user education is effective.

Install antivirus software on all desktops, configure them to provide real-time protection and ensure that the virus definition files are automatically updated monthly. Virus-wall products that scan incoming e-mail are also useful. Use a different brand of antivirus product on the mail scanner, and remember that antivirus software can only detect known hostile code.

Practice good system administration and only allow

users access to what they need. Malware typically exploits the victim's own system privileges. Don't let your NT administrators receive mail or execute office automation software using the same account they use for systems management.

The best defense is user awareness. Train users not to execute software sent through e-mail — even if it's from a reliable source. If users access your LAN remotely through the Internet, then your LAN can be attacked if any remote PC ends up with a back door on it. Prepare your laptop users as well and keep their antivirus software current.

The hostile code threat will continue to steadily increase, and no magic bullet can protect your organization. Fortunately, you can survive hostile code by following best practices for administration and user training.

*Heiser is a security consultant in the Falls Church, Va., office of International Network Services, a global provider of network consulting and software solutions. He can be reached at jay\_heiser@ins.com.*

## WITH A NEW CEO IN PLACE, IT'S BACK TO BUSINESS AT COMPAQ

**T**o those people who have been bashing Compaq and dourly predicting its demise, I have one thing to say: Get a life! Compaq isn't about to take its last breath any time soon, so you might as well get on with business.

With Michael Capellas' appointment as president and CEO, Compaq itself is getting on with business. Capellas was promoted from the ranks of chief information officer and acting chief operations officer to take the helm of the world's second-largest computer company. The appointment surprised many, including Compaq insiders, who were expecting a big-name star from the outside world to be hired.

The fact that Capellas isn't a household name is distressing to many analysts, especially those in the financial community, because he doesn't have prior CEO experience on his resume. To that I say, so what? While I agree that Capellas will have little time for on-the-job training, the more important criteria is that he understand the needs of the customer. Who better to understand the needs of the enterprise IT community than someone who served as CIO for a Fortune 500 company?

My inside contacts at Compaq are excited about Capellas taking the helm. He is open, forthright, decisive and motivating. But most of all, he "gets it." He understands the customers' needs for products that are easy to deploy, easy to use, flexible and powerful. He appreciates the value of the Internet for its potential to change entire supply chains, customer bases, revenue streams and com-

petitive landscapes.

But understanding needs and acting on them are two different things. Can Capellas deliver?

Developing great technology and great products is not a challenge for Compaq. The company always has delivered, and always will deliver, very compelling technology solutions. Two of the bigger challenges for Capellas are the corporate culture clash and the issue of product distribution.

Fully one year after Compaq's acquisition of Digital, there still remains a very divisive culture clash. The physical distance between Houston and Maynard, Mass., isn't nearly as big as the mentality difference between "Compaq Classic" and "Digital Classic." The fact that those two terms even exist internally and seem to have lives of their own are damaging to Compaq's well-being.

As the new head honcho, Capellas has the chance to swing the ax and wave the arm of reorganization to break down these cultural barriers. And Capellas will be swinging the ax, since Compaq just said that up to 8,000 pink slips will be issued in the coming months. Some are leftovers from the Digital acquisition; the others are intended to reduce cost structure and overhead. Though layoffs are never pleasant, they are necessary to get Compaq back in the black.

Having the opportunity to appoint several new senior executives should help Capellas heal the Compaq-Digital divide, as long as he chooses people with minimal vested interest in one of the classic cultures. The fact that Capellas himself is neither "Compaq Classic" nor "Digital Classic" is a good sign.

Another pesky problem is the issue of product distribution methods. Compaq has a rich heritage

of selling through a well-developed network of distributors and resellers. Some have been Compaq partners for 15 years or more. There's no doubt they are one key to Compaq's success. But in the age of direct sales via the Internet, they also can be a burden.

Capellas and his management team must find a way to deliver products and services efficiently and cost effectively based on how customers want to buy the products. Compaq's challenge is to figure out how to capitalize on Internet sales without competing with its own channel. Resellers are a touchy group, and any hint of direct sales could send them scurrying into IBM's or Hewlett-Packard's arms.

Here's where Capellas' extensive knowledge of supply-chain management and Internet technology can help. He has the operational experience in helping to make production and distribution more efficient. While this problem won't be solved overnight, Capellas has good insight into how the Internet can bring efficiencies to the customer choice challenge.

In the race to win enterprise customers, Compaq stumbled in the past three months, but it didn't fall. The company still has an impressive portfolio of solutions and services built around its diverse line of servers, network storage products, desktop and portable clients, security systems and enterprise operating systems. When you make your technology purchasing decisions, you shouldn't have to factor in the financial or management insecurities at Compaq any longer.

*Musthaler is vice president of Currid & Co., a technology consulting firm in Houston. She can be reached at linda@currid.com.*





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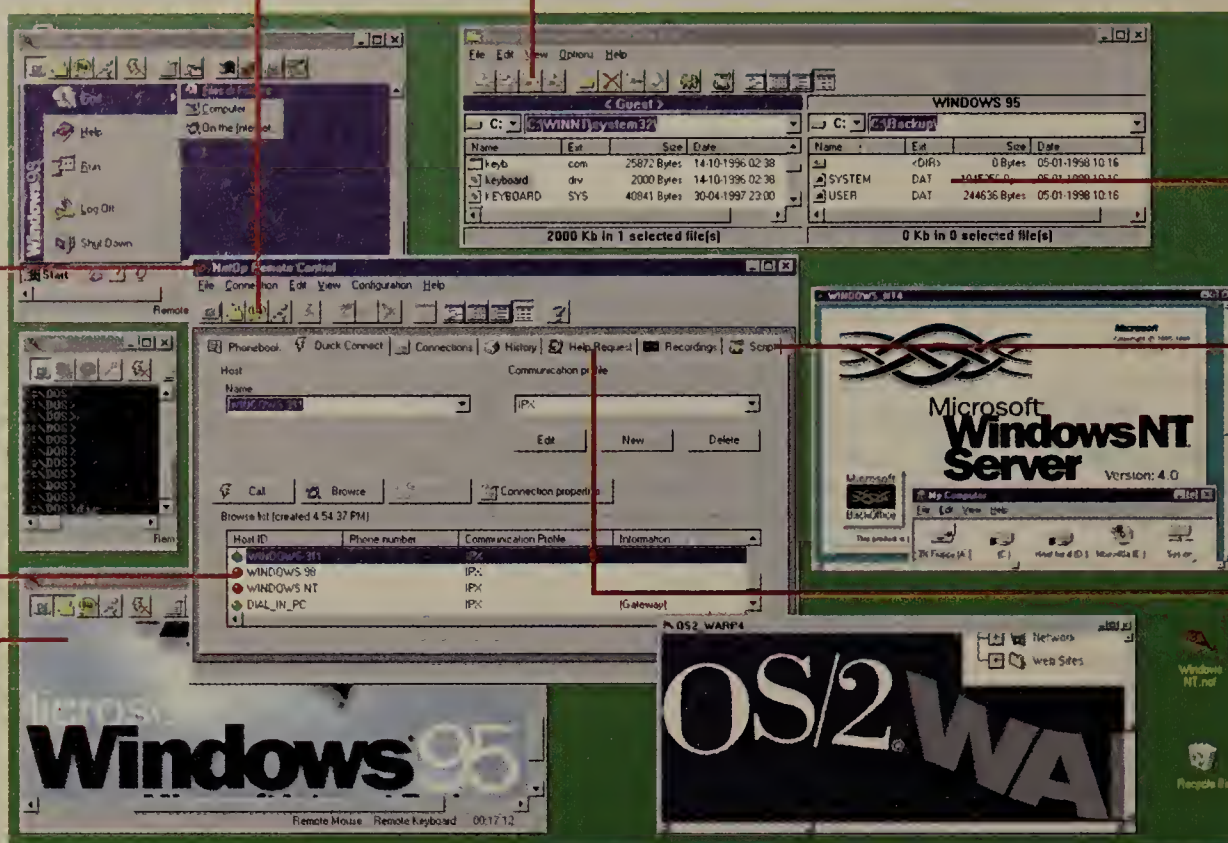
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OVERALL  
RATING  
★★★★★



Watching weak Internet video is about as much fun as listening to a radio with dying batteries. Lost packets lead to dropped syllables, choppy pictures and frustrated audiences.

VIPswitch, a switch vendor from Montreal, purports to deliver "flicker-free" action by giving priority to streaming audio and video traffic. It's a good idea, but when we tested one of VIPswitch's latest releases, VIPswitch 3240, we found it falls short on performance and features.

A simple Layer 2 switch at its core, VIPswitch 3240 has four 100M bit/sec and 32 10M bit/sec Ethernet ports. The ports can handle half- and full-duplex traffic, though VIPswitch 3240 supports autoconfiguration only; you can't manually set duplex parameters.



To speed multimedia traffic, the switch places all Real-time Transport Protocol (RTP) packets and User Datagram Protocol (UDP) packets with a source port number of 1,024 and higher into a high-priority queue. The process is that simple — no tagging of packets, no differential services, no Resource Reservation Protocol.

There's just one problem: It's impossible to exclusively filter RTP packets, primarily because the UDP header doesn't have a protocol field to indicate the UDP payload's protocol type. In addition, there's no standard for segregating streaming voice and video packets with port numbers higher than 1,023. While

# VIPswitch 3240

**VIPswitch aims to make multimedia traffic a priority, but lacks basic features.**

BY JOHN BASS, NETWORK WORLD TEST ALLIANCE

it's possible to pull RTP packets into the high-priority queue — which VIPswitch 3240 did in our tests —

it's also possible that non-RTP packets will make it into the same fast lane.

In our tests, VIPswitch 3240 continued to pull RTP packets

into the high-priority queue until the traffic load became too heavy. When traffic load on the output port reached 165% of the maximum throughput for that port, the switch shut off the high-priority stream. Because a congestion rate of 165% suggests it's time for a network redesign, we weren't too troubled by this.

We were concerned, however, with the results of our initial standard throughput tests. When we ran a throughput test in bidirectional, full-duplex mode with Netcom's SmartBits, VIPswitch 3240 began generating runt packets.

After some troubleshooting, we realized the SmartBits program was manually set for full-duplex mode, while VIPswitch 3240 was trying to negotiate duplex settings. Because SmartBits was manually set, it did not send link negotiation pulses to the switch. The switch defaulted to half-duplex, and error packets resulted. By configuring SmartBits for autonegotiation, we stopped the errors. In a real network, this trait could be problematic when you need the switch to work with a device with manually set duplex parameters or an incompatible autonegotiation mechanism.

Once SmartBits and VIPswitch started working together without errors, throughput reached only 65% of wire speed for the 10M bit/sec Ethernet ports. When we didn't fully load each eight-port, 10M bit/sec module, performance improved sig-

nificantly, as we expected (see [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 3944 for complete performance results).

Latency was pretty low, averaging 40 microsec through the 10M bit/sec ports at 50% of maximum load.

## Wanted: More features

We expected to find a slim feature set because VIPswitch 3240 is an edge switch, but we didn't expect there to be an absence of management features. Even basic management tools we would expect to find in every switch, such as the ability to check link status or packet counts, were missing in VIPswitch 3240.

The positive side to VIPswitch 3240's short feature list is that the device is easy to use and installation is a breeze. There are no serial ports to configure and no card slots for changing port cards because all ports are in a fixed configuration. In fact, the only configurable element of the switch is link aggregation on the four 100M bit/sec ports. Toggling two switches on the back panel lets you group the four Fast Ethernet ports in four different configurations, ranging from four separate 100M bit/sec links to one 400M bit/sec link.

The switch is somewhat scalable

## ScoreCard

Performance 25%	5
Scalability 20%	5
Features 20%	5
Usability 15%	8
Installation 10%	10
Documentation 10%	5
<b>Total score</b>	<b>5.95</b>

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.

because you can shift all traffic from the 32 10M bit/sec Ethernet ports to the four Fast Ethernet ports as traffic increases. But without management, VIPswitch 3240 would be difficult to deploy on a large scale.

We'd like to see VIPswitch beef up the 3240's feature set with basic port management tools and remote configuration options.

In its current state, VIPswitch 3240 has a workable prioritization scheme. However, this feature is based on the assumption that most streaming voice and video traffic will travel over RTP or UDP using port numbers greater than 1,023. While this is a fair assumption today, there's no way to determine that this will hold true in the future.

Bass is a senior technical staff member at Centennial Networking Labs, a commercial test lab at North Carolina State University. He can be reached at [john\\_bass@ncsu.edu](mailto:john_bass@ncsu.edu).

Bass is also a member of the Network World Test Alliance. For Test Alliance information, including what it takes to become a member, go to [www.nwfusion.com/alliance](http://www.nwfusion.com/alliance).



## NetResults

### VIPswitch 3240 VIPswitch

(450) 923-4040  
[www.vipswitch.com/products/vipswitch\\_3240.html](http://www.vipswitch.com/products/vipswitch_3240.html)  
\$7,995

#### Pros

- Easy to install and use
- Simple prioritization scheme

#### Cons

- Performance limitations
- Limited configuration flexibility
- No Layer 3 capabilities
- No management features

## How we did it

We ran throughput, latency and packet-loss tests through all switch ports using Nectar Systems' Smart Applications 2.32. We ran the throughput test in full- and half-duplex configurations. We executed multiple runs for 64-, 128-, 256-, 512-, 1,024-, 1,280- and 1,518-byte packet sizes.

We tested latency with the same packet sizes at 50% of maximum theoretical load to determine a reasonable average latency value using no RTP traffic. All traffic streams were bidirectional with all ports set for full duplex.

Our packet-loss tests reinforced the results of the throughput test by finding the percentage of packet loss at various loads and packets sizes.

We ran a quality-of-service test with Netcom Systems' SmartBits using Netcom Systems' Smart Windows software. We configured five ports and sent four traffic streams through the switch. One stream was made entirely of RTP packets, and the other three streams were non-RTP UDP packets. We analyzed the traffic on the aggregate stream to verify that the prioritized RTP traffic took precedence over non-RTP traffic.





# Practical VPN Deployment: The Next Step

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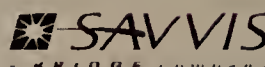
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There are two reasons you should invest in a software metering application: To stay legal and to save money. These programs can help you buy enough licenses to cover your legal requirements, but not one copy more.

Software metering technology has matured to the point that metering accuracy is almost guaranteed. All the programs we looked at track every application users run on their computers, ensure there is a valid license for each program and stop people from running inappropriate and unlicensed software.

What distinguishes applications is how they handle distributed metering stations, enterprise scalability and management. Some programs focus on the users, others on the applications.

All six programs we tested can block server and local application usage. All have time-sensitive controls, so you can make games off-limits until after 5 p.m. Several programs report to higher-level management suites, such as Microsoft's System Management Server (SMS) and Novell's ManageWise, and can pull user information from Novell Services (NDS).

Queues for applications are popular features, as are tricks to verify that licenses are held by functioning, nonlocked computers. Every metering program has some method of allowing VIP users to access applications even when they would otherwise be locked out.

With all this in common, you might expect these programs to be quite similar. You'd be wrong.

KeyServer 5.0 from Sassafras Software is unlike any of the other programs we tested, particularly in its small size and light server requirements. When a product is "something different," it often means you can expect problems — but not this time. KeyServer wins our Blue Ribbon Award for its comprehensive client and server support, which makes it well-suited for heterogeneous nets.

WRQ's Express Software Manager

# Tracking software usage

**KeyServer is tops among six software metering programs that tackle similar tasks in different ways.**

BY JAMES GASKIN,  
NETWORK WORLD TEST ALLIANCE

**Product: KeyServer 5.0**

**Vendor: Sassafras Software**

**Quick to install and easy to manage, KeyServer 5.0 also delivers unmatched client and server support.**



4.5 impressed us with its extensive report options and a huge library of recognized applications, but its client and server support isn't as strong as KeyServer's.

A NetWare bias shines through in Elron Software's SofTrack Software Metering 5.0; the product's client and server support rivals KeyServer's.

Tally Systems' CentaMeter 2.90a is more application-centered than the other products we tested; it ties nearly every function to applications rather than users. Easy installation, flexible management and a wide reach across the enterprise are its strong points. Its client and server support, however, are weaker than our winner's.

We found Funk Software's App-

Meter II 2.1 fairly comparable to SofTrack. The products have a similar level of NDS integration, but AppMeter's reports are stronger. One of AppMeter's best features is that you can easily monitor and administer multiple servers across the network from a single console.

Even more NT-centric than WRQ's Express Software Manager is Lan Licensor 3.11 from ABC Systems and Development. Weak support for Windows 95 and 98 clients, plus minimal support for NetWare, make it hard to consider Lan Licensor an enterprise heavyweight.

## Small wonder

The single installation diskette — yes, diskette — that holds KeyServer 5.0 belies the sophistication of the program and left us wondering how Sassafras Software crammed so much into such a small package.

KeyServer supports the widest range of clients and servers among the products we tested (see graphic, page 46). Server files can be stored locally or on a network server. TCP/IP is the default transport protocol,

but KeyServer also supports IPX and AppleTalk. If AppleTalk is part of your network, you have to run KeyServer on a Macintosh. If you want to use IPX, a Windows or Macintosh server will work. The server must have a Novell IPX protocol stack; clients may have the limited-support IPX client provided by Microsoft.

KeyConfigure, Sassafras Software's configuration and administration program, runs on almost any Windows 95, 98 or NT or Macintosh system. The only requirement concerns applications to be keyed — a Macintosh KeyConfigure system must key Macintosh applications, and a Windows KeyConfigure system must key Windows applications.

Every machine must run a copy of the client software, called KeyAccess, and select a KeyServer from a list of available servers. User names can be typed in during installation, pulled from the Windows name in the system or identified through a system environment variable on each machine.

As soon as the client software is installed and configured, all client programs on local computers and servers are swept up into the KeyServer database. All that was left for us to do was select one of three levels of control for each program: ignore, log or control.

The programs we instructed KeyServer to ignore, such as system files, were properly ignored from that point on. Logged programs are simply tracked and reported. Controlled programs have a bite taken from them and stored on KeyServer. Until KeyServer provides the key piece of code, the application won't start. Because applications are modified, you can copy and distribute them in their controlled state without fear of piracy. You can handle suites as one large group or several keyed applications, depending on vendor license requirements.

Macintosh networks can set up a shadow server for fault tolerance, but both servers must be Macintoshes and one must act as a hot-spare in standby mode. KeyServer doesn't support the hot-spare feature with Windows.

## ScoreCard

	Enterprise support 30%	Application control 15%	Manageability 15%	Client support 15%	Reporting 15%	Installation 5%	Documentation 5%	Total score
Sassafras Software's KeyServer 5.0	8	8	8	8	7	8	7	7.80
WRQ's Express Software Manager 4.5	7	8	8	7	9	7	8	7.65
Elron Software's SofTrack Software Metering 5.0	8	7	7	8	6	7	7	7.30
Tally Systems' CentaMeter 2.90a	7	7	8	7	7	8	7	7.20
Funk Software's AppMeter II 2.1	7	7	7	7	8	7	7	7.15
ABC Systems and Development's Lan Licensor 3.11	6	7	7	6	8	4	7	6.55

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.



reports pull together distributed information from multiple KeyServers to a single administration system running KeyConfigure. A single click launches any of 11 default reports. Export options are fairly limited (see graphic, page 46).

In general, we'd like to see more granularity in handling suites and a wider selection of reports. That aside, if you're unlucky enough to have to support a network with Windows, NetWare, Macintosh, Linux and Banyan VINES, your best choice for software metering is KeyServer. Its superior control, quick installation and flexibility make it an excellent choice for a homogenous net as well.

#### Application control plus reporting

Our first impression of WRQ's Express Software Manager 4.5 wasn't the greatest. When we tried to install the program's Express Console on a Windows 98 system, the files on the CD-ROM didn't match the file names the installation program was looking for. Although the excellent 523-page manual says the Express Console component can be loaded onto a Windows 98 machine, WRQ clearly leans toward NT. In fact, WRQ requires NT to run Enterprise Services, which automates portions of the software library and client installation processes. Taking a guess, we moved to the Windows NT system and installation went smoothly. From that point on, we were impressed

with the program, particularly its extensive selection of reports and well-designed interface.

WRQ allowed us to store application library files — which store all the client log files — not only on an NT server, but on NetWare 5.0 or Network File System as well. This remote storage capability is about the only non-NT server support in Express Software Manager.

Express Software Manager doesn't read NetWare directory information, but promises to offer a way to import Windows 2000 directory details when Active Directory ships. Integration with Microsoft's SMS is available.

To begin metering, we had to run a single program on each workstation, through a logon script or manually. The DOS program quietly scans the local system's hard disk and sends the information to the Express Console quickly and without user intervention. Express includes a huge library of recognized applications in its Knowledge Base. Applying the Knowledge Base to the autodiscovered list of applications identifies just about every single program on each client. You can then detail unrecognized applications and add them to the Knowledge Base.

With a single click at the Express Console, we determined whether to meter applications for information or manage licenses, which includes locking out users when the license pool is exhausted.

Express Software Manager handles

suites and their internal applications flexibly, allocating licenses to entire suites or individual applications. A special VIP password can temporarily disable metering on files to allow critical users access to applications. Laptops can check out a license, or you can give each laptop its own applications with proper licenses.

WRQ's report selection is unmatched. When we started WRQ's Express Reports application, we found roughly 70 reports grouped by application, machines, users, suites and activity. Custom options depend on whether you're using an Access 97 database or Microsoft's SQL Server, but either option will keep a report fanatic happy. With a little extra work, you can post reports to a Web server if you're using SQL Server.

Information from multiple Express servers is handled by the Express Library Manager, which gathers and controls the log files from each server installation. This may sound like a lot to set up, but Express Software Manager's clear, two-paneled Explorer-like interface eases all activities. WRQ's online PDF manual does an excellent job of hyperlinking every topic.

All the positives — easy installation on NT, a huge library of recognized applications and excellent reports — are somewhat dimmed by the lack of directory integration. Though Active Directory is nonexis-

tent, NDS is here now, and taking advantage of Novell's shipping directory service would make Express Software Manager more useful.

#### Strength in NetWare

Elron Software's SofTrack Software Metering 5.0 installs fairly easily, is easy to grasp and uses the host server's information to put user and application lists at your fingertips. It's solid and competent, if not flashy.

SofTrack reads bindery files for NetWare 3.X and ties neatly into NDS in NetWare 4.X and 5.X. Active monitoring files run as NetWare Loadable Modules on NetWare servers, and the package includes a snap-in for NetWare Administrator, the primary NetWare management tool.

That's not to say it's all NetWare, however. Several years ago, SofTrack added NT server support whereby the server-based files run as NT services; you don't need a NetWare server on the network for this. One administration console can manage any server anywhere on the network, and you can share application licenses between NT and NetWare servers.

We experienced some minor but annoying installation glitches. The Windows 98 station acting as the administrator console came up with errors when starting the program, and we had to reboot it. Elron should reboot by default instead of giving you the option to run the program immediately. We also had to manually add the batch file that starts the

## NetResults

### KeyServer 5.0

Sassafras

Software

(603) 643-3351

[www.sassafras.com/keyserver.html](http://www.sassafras.com/keyserver.html)

Pricing ranges from \$30 to \$57 per client.

#### Pros

- ▲ Strong client, server support
- ▲ Strong application control
- ▲ Easy installation

#### Cons

- ▼ Slim selection of standard reports
- ▼ Few report export options

### Express Software Manager 4.5

WRQ

(800) 872-2829,

(206) 217-7100

[www.wrq.com/products/eminfo.html](http://www.wrq.com/products/eminfo.html)

Pricing ranges from \$11 to \$15 per client.

#### Pros

- ▲ Comprehensive selection of standard reports
- ▲ Large library of recognized applications
- ▲ Good management interface

#### Cons

- ▼ No NetWare support
- ▼ Lacks directory integration with current products

### SofTrack Software Metering 5.0

Elron Software

(800) 767-6683

[www.elronsoftware.com](http://www.elronsoftware.com)

Pricing ranges from \$995 for 25 users to \$7,495 for 1,000 users.

#### Pros

- ▲ Strong client, server support
- ▲ Well-integrated with NDS

#### Cons

- ▼ Minor installation problems
- ▼ Poor report export options

### CentaMeter 2.90a

Tally Systems

(603) 643-1300

[www.tallysystems.com/cenergy/products/ctm/index.html](http://www.tallysystems.com/cenergy/products/ctm/index.html)

Pricing ranges from \$10 to \$15 per client.

#### Pros

- ▲ Strong management tools
- ▲ Easy installation
- ▲ Strong report export options

#### Con

- ▼ Client, server support could be improved

### AppMeter II 2.1

Funk Software

[www.funk.com/appmeter.html](http://www.funk.com/appmeter.html)

Pricing ranges from \$695 for 25 users to \$4,495 for 500 users.

#### Pros

- ▲ Crystal Reports module adds reporting flexibility
- ▲ Well-integrated with NDS
- ▲ Strong management tools

#### Con

- ▼ Minor installation problems

### Lan Licenser 3.11

ABC Systems and Development

(781) 270-0699

[www.abcsystems.com](http://www.abcsystems.com)

Pricing ranges from \$15 to \$27 per client, plus 30% of end-user prices for optional Lan Licenser Enterprise Manager module.

#### Pros

- ▲ Good application, suite control
- ▲ Well-integrated with SMS
- ▲ Good selection of standard reports and good export options

#### Cons

- ▼ Rough installation
- ▼ Weak support for Windows 95 and 98 clients
- ▼ Minimal NetWare support



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NetWare server portions of SofTrack to the NetWare start-up batch file.

Clients are tracked through their NDS activity, so use of server-based applications is monitored immediately. Local applications require a local program to run and report back to the server. A check box tells SofTrack to alert the network manager when local control files are bypassed, allowing nonmetered access to local applications.

The manual says the program can't track DOS applications within a Windows DOS box, but SofTrack immediately caught our 3C5x9CFG.EXE network board configuration DOS program within a Windows 95 client.

You can select applications to monitor from a list of programs discovered by the SofTrack servers, or you can type application executable files by hand.

If your client applications are stored on local and network drives, you must add a client program to track local files and monitor them separately.

Reports cover a variety of management details and are based on log files stored by SofTrack. Output formats are limited, and a separate "Gathering" step is required to collect information from all servers to produce consolidated reports.

SofTrack's context-sensitive help is decent, and the 113-page manual is clear and helpful.

#### Application focus

CentaMeter 2.90a is part of a Tally Systems' Cenergy suite of management tools but is also sold separately. It resembles its NetCensus software inventory sibling with its easy installation, clear interface and wide variety of reports (NW, May 31, page 51). CentaMeter plays nicely with Microsoft's SMS and is the only application we tested that ties into Novell's Licensing Service Application Program Interface (LSAPI) implementation.

Installation was smooth, including configuration of the administration console system.

You can manage multiple CentaMeter servers from a central location; log file gathering occurs automatically, so complete reports are ready to read with the morning coffee.

Tying the client agent software to the network logon process is clean and simple if all clients log on to the network. For stations that can get to net servers without using a logon script, CentaMeter includes instructions for using system policies on Windows 95, 98 and NT machines.

CentaMeter supports three types of metering: passive metering counts the applications used;

restricted metering blocks access without a license; and LSAPI-enabled metering monitors application use and sends information to the license server.

CentaMeter includes scores of predefined applications likely to be hiding on the network. Additionally, you can generate a list inside the Application Assistant by passively logging all applications used for a few days.

Defining an application is separate from licensing that application but is a quick step.

E-mail notification when error conditions arise — if applications are unavailable or the license limit has been exceeded, for example — adds a nice touch. You can manage suites as individually licensed products, a complete bundle or both.

NDS users and has a "stealth" metering mode that lets you track server-based applications without any software on the client.

Our biggest gripes? The poor directions in the 160-page manual, which hurt during installation, and the installation itself, which required us to work our way through five disks. Fortunately, the server part of the installation process was easy. Servers appear automatically, along with their hard-disk volumes. Transport protocol choices include Named Pipes (Microsoft NT), SPX (Novell) and TCP/IP.

AppMeter pulls information from NDS, but it doesn't offer a plug-in for Novell's NetWare Administrator program. However, its console program is a good one.

Servers are managed individually

quickly. Simply click the Key icon, provide an umbrella name, such as Spreadsheets for a licensed group, and browse the application lists.

The main management program reveals a list of available servers; license details, including host server, license name and a description typed during license setup; and real-time monitoring details, including the numbers of licenses, active users and users waiting. AppMeter lets you deem licenses permanent, good until a certain date or good for a certain number of days after installation. The program lets you assemble suites by grouping individual applications.

You can meter local applications by "wrapping" them with a special client application. These local applications aren't portable. The client must obtain the key code from the

### Client and server support and report export options

	Server support	Client support	Report export options
<b>Sassafras Software's KeyServer 5.0</b>	Macintosh OS 7 and above Macintosh OSX Windows 95, 98 and NT NetWare 3.X and above Linux	Windows 3.X, 95, 98 and NT Macintosh OS 7 and above	Text Tab-delimited text
<b>WRQ's Express Software Manager 4.5</b>	Windows NT Server	DOS 4.0 and above Windows 3.X, 95, 98 and NT	Microsoft Word Microsoft Excel Microsoft SQL Server HTML
<b>Elron Software's SofTrack Software Metering 5.0</b>	Windows NT Server 4.0 NetWare 3.X, 4.X and 5.X	DOS 3.0 and above Windows 3.0 and above Macintosh 6.0.3 and above OS/2 2.0 and above	Text Comma-delimited text
<b>Tally Systems' CentaMeter 2.90a</b>	Windows NT Server NetWare 3.X and above Banyan VINES IBM LAN Server Microsoft LAN Manager	DOS 5.X and above Windows 3.1X and above	Text Microsoft Word Microsoft Excel Lotus 123 Rich Text Format Crystal Reports Data Interchange Format HTML
<b>Funk Software's AppMeter II 2.1</b>	Windows NT 3.51 and above NetWare 3.12 and above	DOS with NetWare servers Windows 3.1X and above	Text Comma-delimited text dBASE
<b>ABC Systems and Development's Lan Licenser 3.11</b>	Windows NT Server 4.0	Windows 3.11 and above	Text Microsoft Word Microsoft Excel Lotus 123 Rich Text Format

CentaMeter's 31 reports are generated from a separate report program that starts automatically when you click the "Extended Report" option. For custom reports, you can build special queries and save them for reuse.

No paper manual arrived, but the PDF manual is a joy. Hyperlinks from its on-screen table of contents make homing in on topics a snap.

#### Funk-a-delic

Like SofTrack, AppMeter II 2.1 from Funk Software works on NetWare and NT servers, easily integrates

from a single console, and most reports are server-centric. User details are tracked across servers, and the included Crystal Reports provides other server consolidation options.

We had trouble finding client installation details. Often names weren't listed and required referenced files couldn't be located by the client, even though we chose the Network Install Program for Clients during installation.

But when we tried the stealth mode, which is tied to NDS user names and applications on the servers, the files in use popped up

server for the application to run.

AppMeter generates reports by filtering log files and offers several preprogrammed reports. To design new reports, you can use the bundled Crystal Reports module, which delivers wonderful report flexibility. Export options are only slightly more generous than SofTrack's.

#### NT emphasis falls short

Even more NT-centric than WRQ's Express Software Manager is Lan Licenser 3.11 from ABC Systems and Development. It's also the most maddening metering software to



work with.

Lan Licensor didn't install correctly on the Windows NT 4.0 server until our third try, after we talked with technical support. We didn't end up changing anything, just trying again.

Running the client programs caused Windows Registry problems so severe the Windows 95 machine couldn't work even in Safe mode, and the Windows 98 system locked after every reboot. Fortunately, our technical support representative was well-versed in how to reverse the damage by hacking the Registry. Kick-starting server processes required manually stopping and restarting them.

## More Online

Network World's software inventory review.

Licensing news from the Business Software Alliance.

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As indicated by its Back Office certification, Lan Licensor aims at the enterprise and is the only metering system that advertises hierarchical control with a single Site Server controlling multiple Metering Site Servers. Lan Licensor includes a database, but suggests using SQL Server for larger installations. Unfortunately, ABC's idea of enterprise doesn't include NetWare. Metering Site Servers can run on NetWare, but only up to NetWare 4.X under bindery emulation; there's no support for NDS.

Once installed, the program offers some nice touches. A Quick Start page on the console puts all the major functions one click away, including adding new products, configuring products, viewing licensed and unlicensed products, and linking to a new Metering Server. The flexible console includes multiple wizards and help files.

Lan Licensor catches every small program that goes between systems and provides good control over suites and their internal applications. Three pull-down menus, labeled Configuration, Operations and Status, put even

more functions a click away. Not only does Lan Licensor plug into SMS, but Microsoft licensed it to fold inside some versions of SMS.

Lan Licensor includes a 152-page "Getting Started" guide in paper and

Adobe PDF formats. The product's 15 standard reports offer more graphical options than the other programs, including 2-D and 3-D bar graphs, 3-D perspective graphs, and area and line graphs. Report export formats

cover a wide range.

James Gaskin is a freelance writer specializing in technology. Visit [www.gaskin.com](http://www.gaskin.com), or e-mail him at [james@gaskin.com](mailto:james@gaskin.com).

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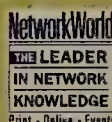
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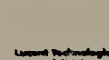
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When I'm on the road, that means making a move to my modem, and that means finding a phone jack, which is not always conveniently

located within the 6-foot range of my phone cable. Acer NeWeb promises more freedom for mobile users. The two WDC-900 transceivers in Acer

NeWeb's Wireless PC Connection Kit replace a serial cable for PC-to-modem connections or Windows 95 Direct Cable Connections. One transceiver is powered from the keyboard port on your laptop; the other requires an AC/DC adapter, which is actually heavier than one of the transceivers. A short cable connects to the serial port of the PC; another connects to the modem's serial port. Press a button on the side of one of the transceivers, and you're connected without wires.

I found the wireless connection to be as speedy as a wired one, but the link didn't have legs. While the vendor touts a range of up to 450 feet, I lost my connection at about 20 feet inside *Network World's* cubicle-filled offices.

The transceivers are light, but they're relatively bulky. They also require you to have an external modem. A better solution for most mobile workers would be a PC Card modem and a 25-foot telephone cable.

As I was getting ready to test the Wireless PC Connection Kit, a new external modem landed on my desk — Actiontec's 56K External Call Waiting Modem, clearly aimed at consumers. If you have call waiting service at home, the phone you attach to the modem will ring even when the modem is connected to an online service. You can pick up the phone and find out who's there, but only for a few seconds. If you stay on the call, your online connection drops. If you choose to go back online, chances are it drops anyway before you've had a chance to explain to your caller that you're in the middle of an important file transfer.

It's an interesting capability, but most home offices would be better off with two separate phone lines. The 56K External Call Waiting Modem lacks many of the advanced features of Multi-Tech's MessageSaver (NW, March 22, page 63), though it's correspondingly less expensive. Still, in a commodity market, call waiting features make this the right product for some users. ▣

Call for nominations:

# 1999 USER EXCELLENCE AWARD

Looking for recognition for a job well done or know someone who deserves such acclaim?

Then it's time to submit an entry for *Network World's* 1999 User Excellence Award competition.

The User Excellence Award, co-sponsored by ComNet, honors companies that make innovative or effective use of network technology to meet business objectives. Past winners include companies such as Bear Stearns, Best Western, Eli Lilly, Prudential

and Unity Health.

This year's winners will be profiled in our first-annual Best Issue, a Signature Series supplement coming Nov. 15, and will be honored at an awards ceremony at ComNet D.C. 2000.

To fill out an entry form, go to Network World Fusion at [www.nwfusion.com/excellence.html](http://www.nwfusion.com/excellence.html). But hurry, the competition ends soon!

#### Net Results

##### Wireless PC Connection Kit

Acer NeWeb  
(408) 467-7422

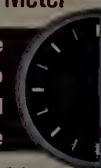
[www.acerneweb.com/html/consumer/wdc900/wdc900gen.html](http://www.acerneweb.com/html/consumer/wdc900/wdc900gen.html)

Price: \$149

**Bottom line:** Adds flexibility for untethered workers, but a longer phone cable is a better solution.

#### Coolness Meter

Awesome  
Primo  
Cool  
Wannabe



##### 56K External Call Waiting Modem

Actiontec  
(800) 371-0442

[www.actiontec.com/products/modems/cwe/index.html](http://www.actiontec.com/products/modems/cwe/index.html)

Price: \$125

**Bottom line:** A solidly average modem with strong appeal for call waiting junkies.

#### Coolness Meter

Awesome  
Primo  
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# Management Strategies

Career Development, Project Management, Business Justification

## Nonprofit networks

**IT executives from nonprofit groups share their secrets for running the LAN on a tight budget.**

BY SUSAN BREIDENBACH

**I**t's hard enough to calculate return on investment, but how do you measure it when, by definition, your organization doesn't have any profit to associate with a network project?

This quandary is just one of the unique challenges nonprofits face as they struggle to keep up with technological change. Most nonprofit groups can't compete with private industry salaries, and they often fight a perception that nonprofits will settle for obsolete castoffs.

"What we are really in is the information business," says Harry Johns, executive vice president for strategic initiatives and marketing at the American Cancer Society in Atlanta. "We don't have to be on the bleeding edge, but we have to be very good at it."

No matter what type of company you work for, there are several lessons to be learned from the technology pros who know how to make the most of a nonprofit group's limited resources.

Judicious use of outsourcing, volunteer help, internships and equipment donations can help stretch IT budgets, but they all present potential pitfalls.

"The biggest obstacle you have to overcome is your management, which in nonprofits tends to come from the pre-PC generation," says Peter Saliba, director of technology for The Holderness School, a boarding school in Plymouth, N.H. "You need to spend a lot of time educating them and justifying investments in terms of intangibles like reaching more constituents or keeping pace with competitors."

But on the upside, directors of nonprofits are skilled fundraisers. If you can convince them something is important, they are good at getting money for it.

Still, nonprofits can't pay corporate IT salaries or bolster compensation packages with stock options. The 1999 Network World Salary Survey shows that

network professionals who work for nonprofit organizations earn an average of \$55,606 in total compensation, while their counterparts in profit-oriented ventures bring home an average of \$82,776.

Consequently, the perks at nonprofits have to be largely emotional and collegial.

Nonprofits must recruit people who are looking for personal fulfillment and better quality of life. The organizations tend to be more lenient about work schedules as long as people are doing their jobs.

The community and the diversity of the job are what drew Saliba to Holderness. "I develop and present five- and 10-year technology plans, and I replace the toner cartridges in the printers," he says. He also coaches varsity soccer and teaches history.

Nonprofits can appeal to network professionals suffering from midcareer burnout. You'd be surprised at the number of highly competent people who want to apply their skills in a place where they will make a difference, says Michael Gilbert, president of The Gilbert Center, a Seattle-based incubator for projects that help nonprofits take advantage of the Internet.

Internship and volunteer programs can be mutually beneficial to volunteers and nonprofits. In some areas, interns will work for college credits and job experience.

"Interns bring a number of things to organizations," says Thomas Sobczak, MIS director for Woman's American ORT in New York. "They also have a lot of energy, which is very important in nonprofits where everyone tends to be overworked."

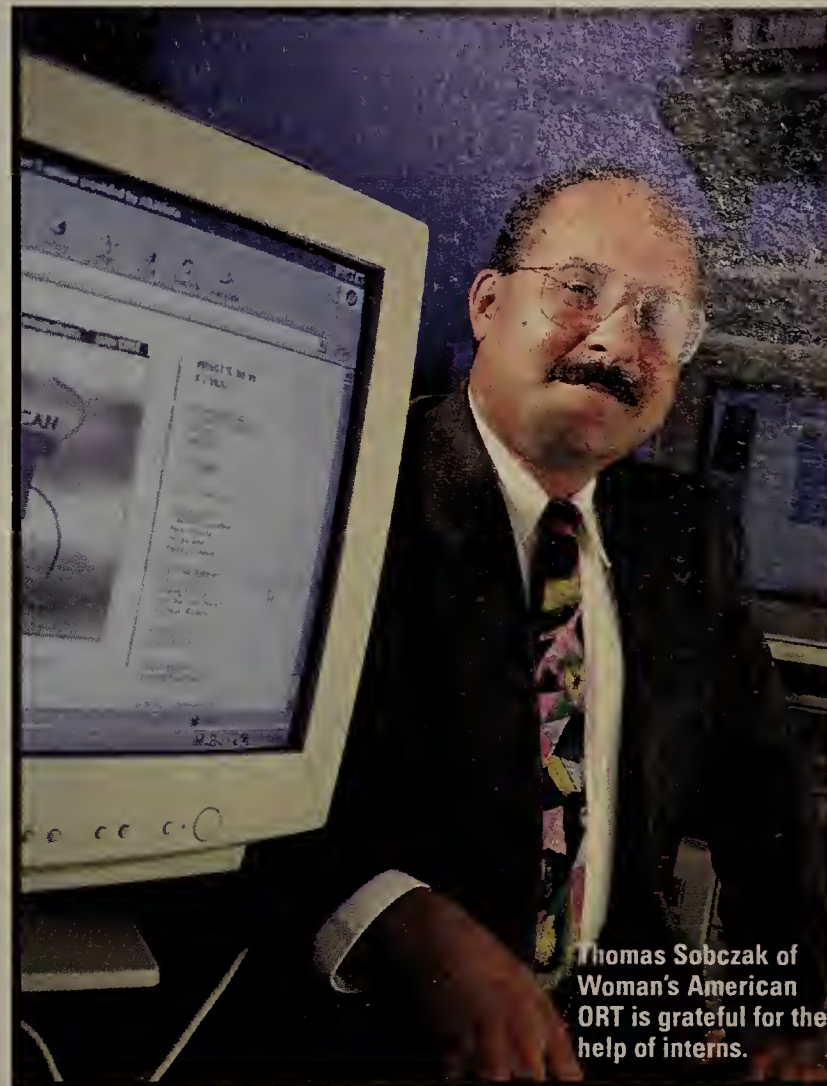
There are often IT professionals who are committed to an organization's mission and are ready and willing to volunteer time. But exploiting such resources can be difficult.

Someone on the staff has to set aside time to work with the volunteers. Nonprofits such as Habitat for Humanity recommend assigning volunteers to straightforward tasks that don't require any transfer of knowledge.

Conversely, the American Cancer Society prefers to use high-end volunteers to help with strategy and present the case for technology to the board.

Nonprofits are often too small to have a strong IT department and too large to ignore IT. The obvious solution is outsourcing, says Jeff Behrens, president of Telluride Group, an outsourcer in Newton, Mass., that has a large number of nonprofit clients.

"Selective outsourcing has saved us about 75% in



Thomas Sobczak of Woman's American ORT is grateful for the help of interns.

CHRISTOPHER WELLS/MFG

network administration costs, and we aren't getting a discount," Sobczak reports. Other nonprofits prefer to keep ongoing network operations inside and outsource application support.

"It was hard for us to get people who knew all the products well enough, so we outsourced our help desk," said Darian Boggs, network communications analyst for Habitat.

Outsourcers generally don't offer pro bono help or discounts. While product donations are tax-deductible, gifts of service are not. However, some outsourcers will turn around and donate some of the payment they receive.

Moreover, nonprofits can benefit from the personal commitments that individual board members of major suppliers have made to their causes. One of Cisco's directors has an interest in Habitat, and the vendor has donated or provided discounts on new equipment.

However, managers need to carefully evaluate product gifts for associated costs of ownership.

This advice applies equally to Web sites. The Web's lure is irresistible as an inexpensive medium for advertising, recruiting volunteers and soliciting donations. Volunteers may develop your site for free, but you're going to have to maintain it, notes the American Cancer Society's Johns. "A poorly maintained site can do more harm than good," he says.

Breidenbach is a consultant and freelance writer in San Mateo, Calif. She can be reached at SBreide@aol.com.

### More Online

- Check out a blueprint for how nonprofits can use technology more effectively.
- Would you like to lend your technical skills to a worthy cause? *Network World* and the United Way are working to match up volunteers with nonprofit organizations in need of IT expertise.
- Join a forum about the network challenges facing nonprofits.



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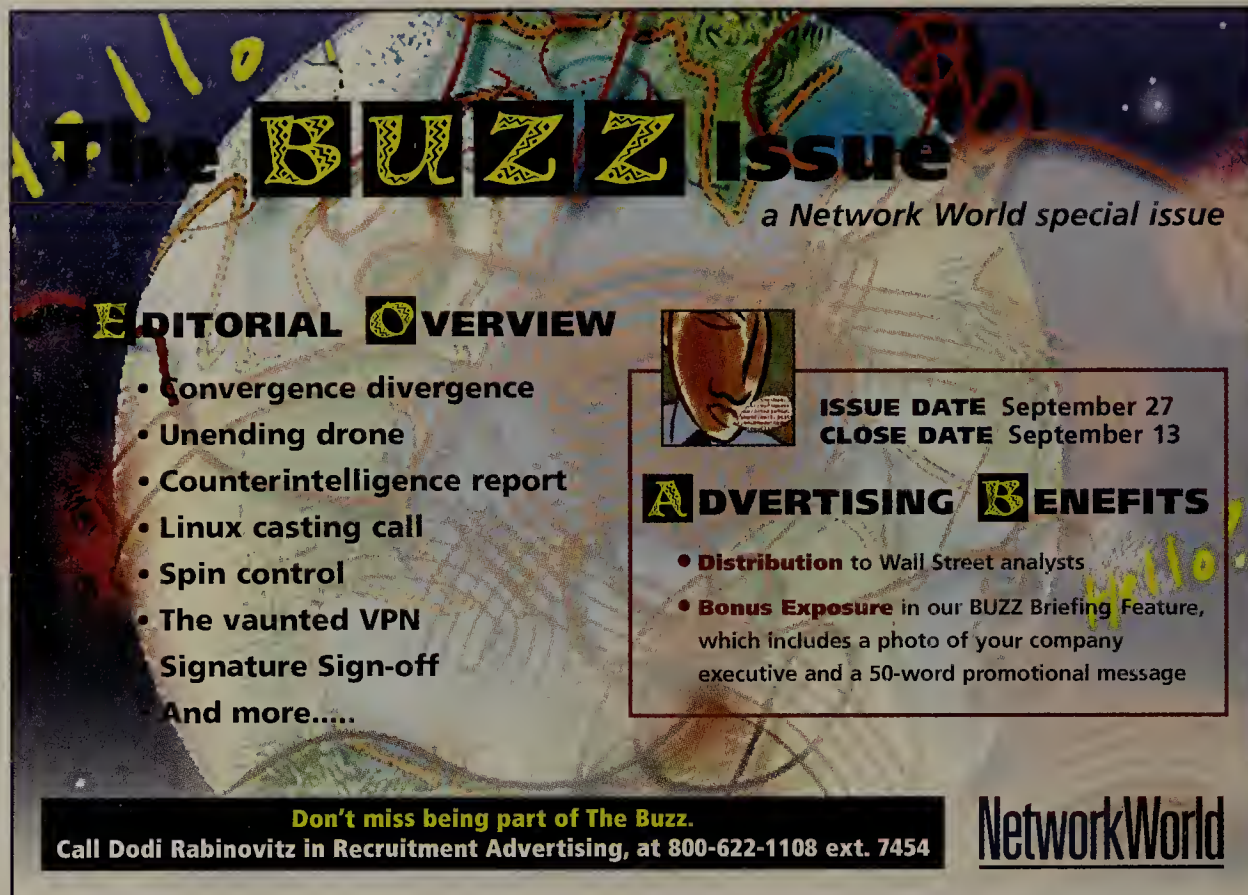


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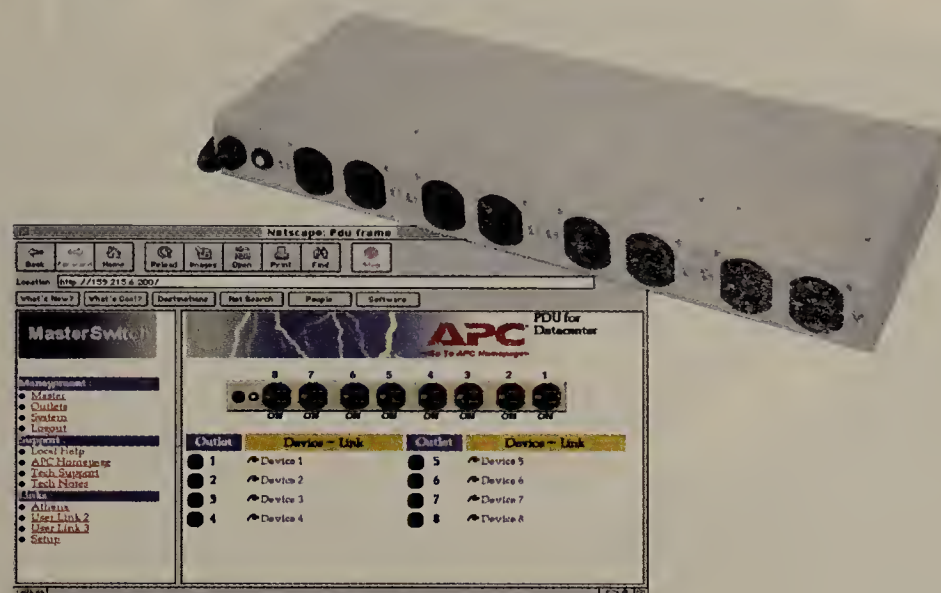
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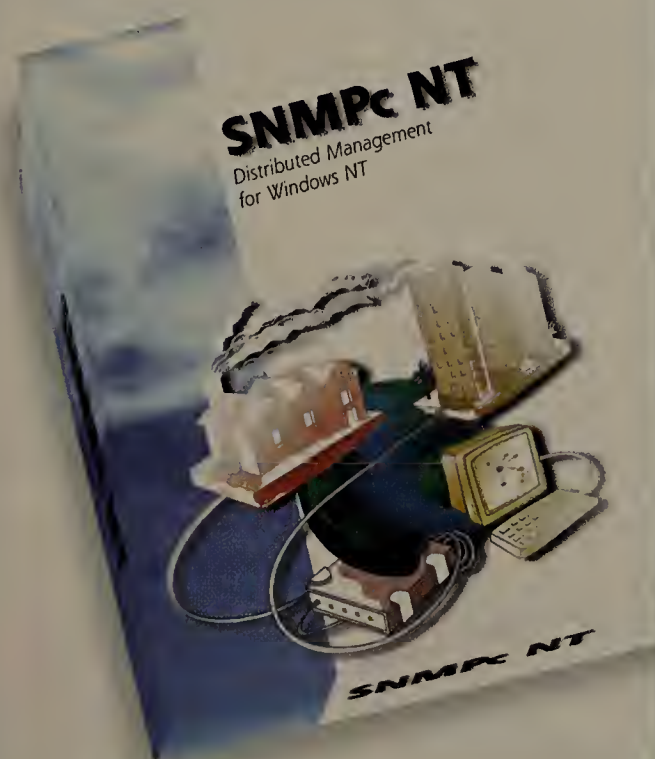
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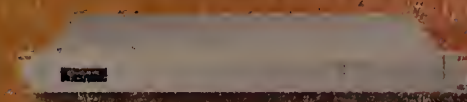


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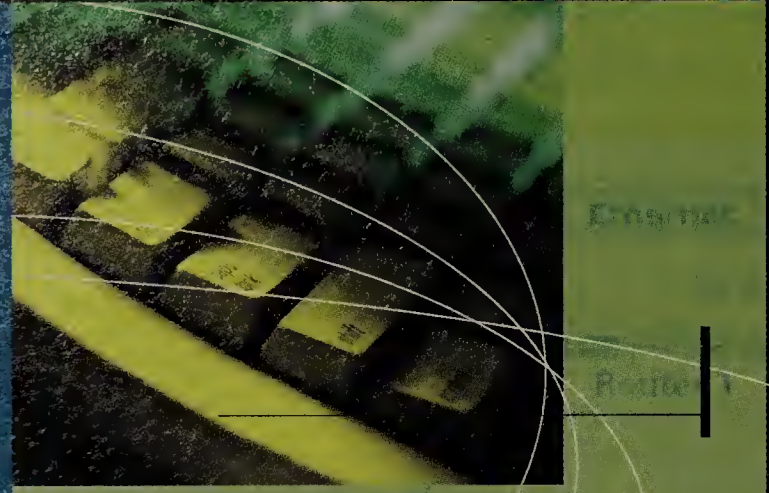


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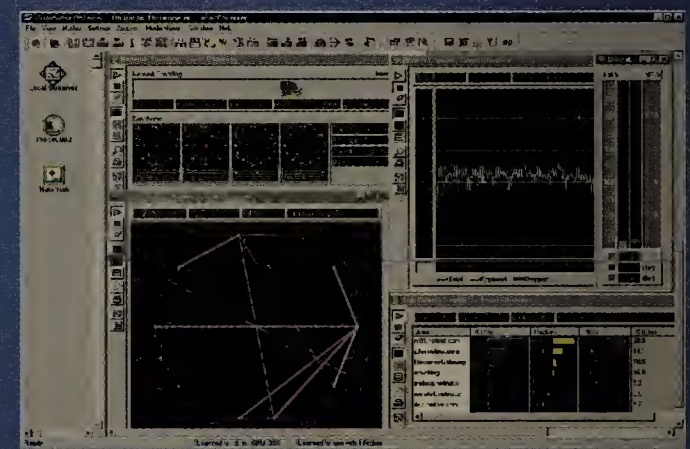


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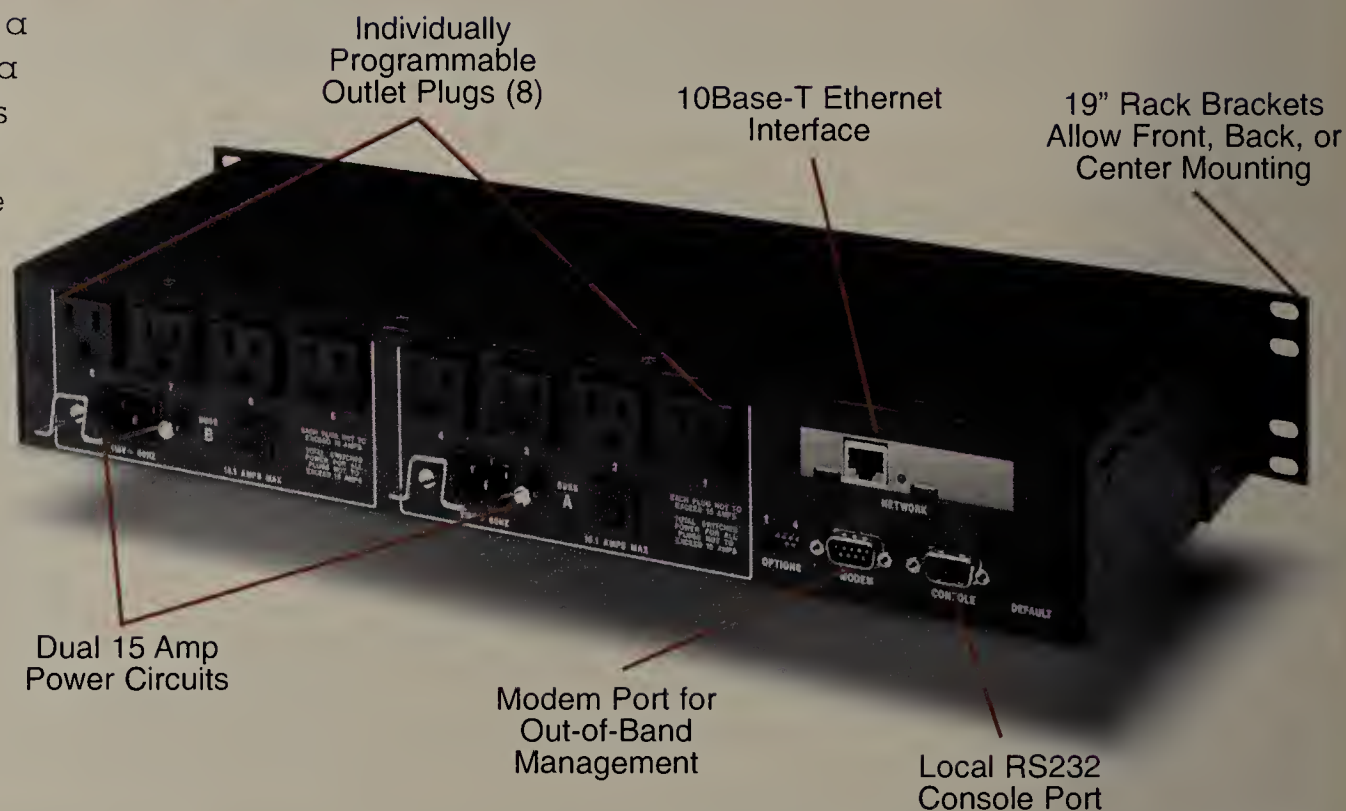


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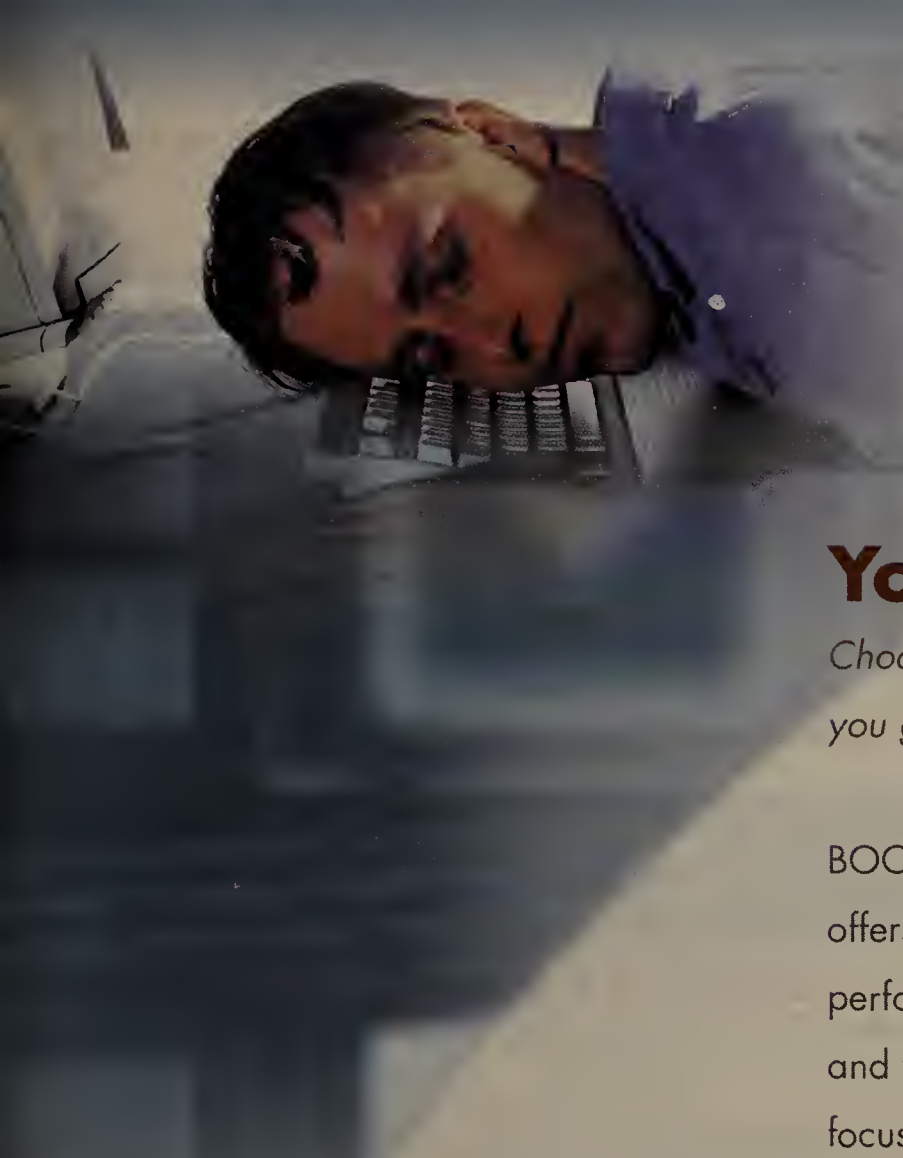
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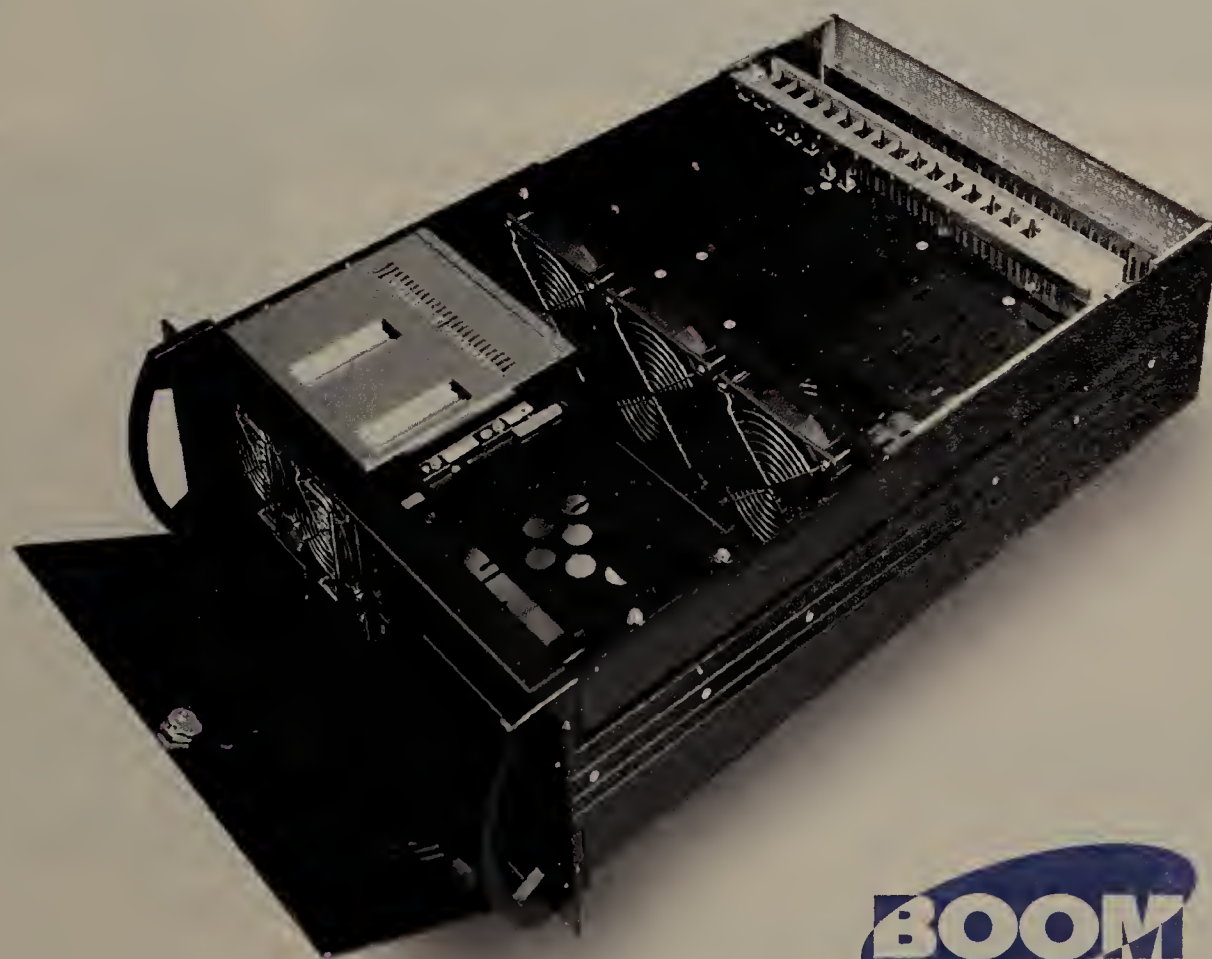


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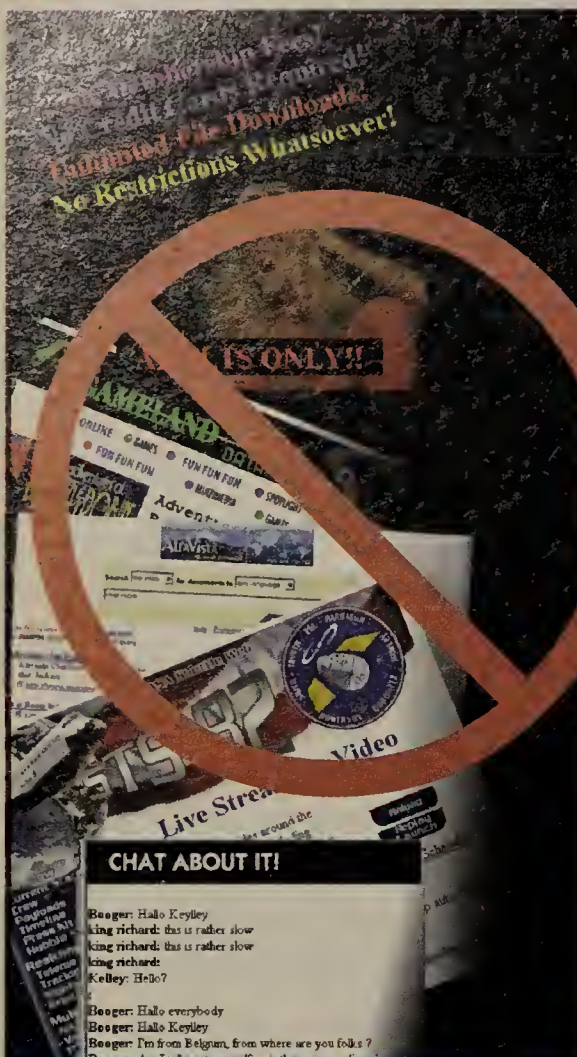
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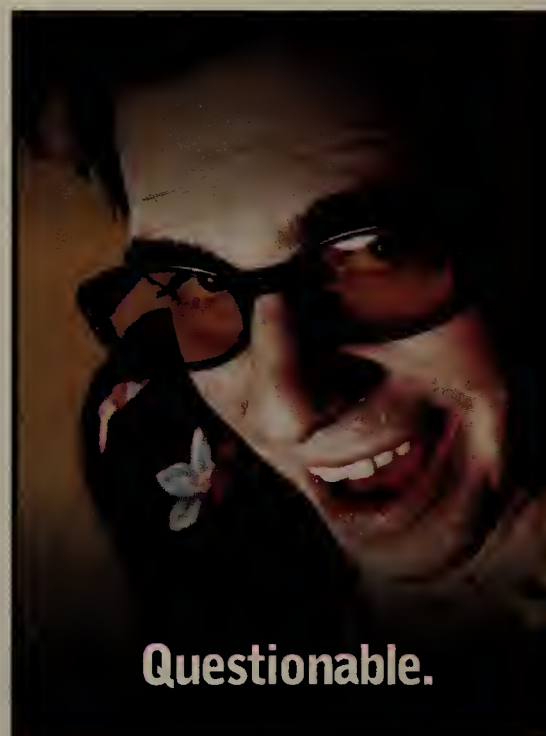
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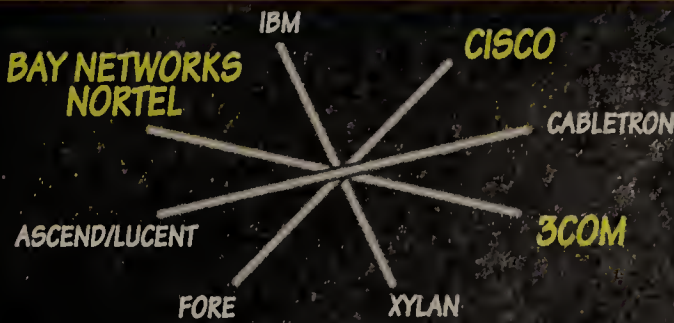
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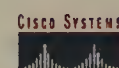
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Veritas Software	24	37	<a href="http://www.veritas.com">www.veritas.com</a>
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American Power Conversion	NetSuite
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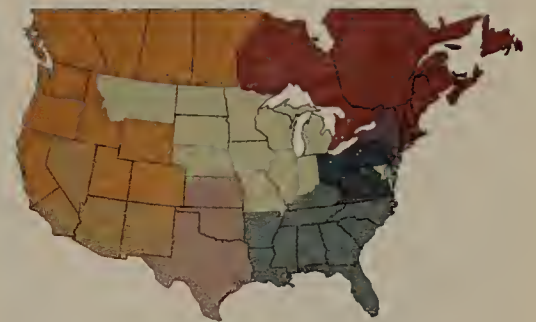
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**E-comm,**  
continued from page 1

enough for a high-volume e-commerce site, he says. And Home Depot expects to be handling up to 2,700 customer transactions per second on its site.

Home Depot's choice for e-commerce is an onsite cluster of 21 Hewlett-Packard HP-UX servers. Home Depot is a big Java programming shop, with 260 developers building programs that work with a BroadVision catalog server and a Novera application server.

Currently, in-house staff is building the back-end links into databases containing store inventory. This will let Web shoppers this fall see what's in and out of stock in each of the 844 Home Depot stores.

The Home Depot e-commerce strategy is not to eliminate retail outlets, but to

merge online buying as tightly as possible with what goes on in its brick-and-mortar stores.

"If I'm looking for a product, part of commerce is seeing availability," Anderson says. "It will tell you if the store across the street has something you need for a home improvement project. And if the store doesn't, [the site will show you] where you can get it."

## Amway's approach

Amway's owners, the DeVos and Van Andel families, have set up an Internet business called Quixtar.

Quixtar executives say Amway's e-commerce effort won't cut out the millions of sales representatives who last year sold more than \$5 billion in Amway nutrition supplements and laundry products.

Starting next month, the Quixtar site will be selling these products directly to the

public, but every transaction will be credited to one of the Amway representatives, known as "independent business owners (IBO)."

"Quixtar will contract back to Amway with the same commission structure," says Randy Bancino, senior manager of the Internet group. "We

## A tale of two e-commerce strategies

**Home Depot is basing its online storefront on Java and Unix, whereas Amway is relying heavily on Microsoft software.**

	Home Depot	Amway
<b>Catalog engine</b>	BroadVision	Microsoft's SiteServer Commerce Edition
<b>Application server</b>	Novera	Vignette
<b>Server farm</b>	21 HP Unix servers, hosted onsite	50 NT servers, hosted onsite
<b>Access lines</b>	Multiple DS-3s	Multiple DS-3s
<b>Programming</b>	Java	Various; IBM's MQ Series for legacy integration

Home Depot's  
Mike Anderson



MICHAEL A. SCHWARTZ



Amway's  
Randy Bancino

**Cisco,**  
continued from page 1

slots for voice modules, such as PBX connections, and WAN modules, such as ISDN and T-1 links. The device also has a 10/100M bit/sec autosensing Ethernet port and an internal expansion slot for hardware-assisted data encryption.

pected to take hold first in small and midsize enterprises and in the branch offices of larger enterprises. So it was incumbent upon Cisco to unveil a low-cost voice- and fax-over-IP product such as the 1750, observers say.

The 1750 is also strategic to Cisco from a service provider perspective. Service providers going after small businesses will

1998 to \$700 million this year and \$3.6 billion in 2002.

The 1750 is powered by a Motorola MPC860T PowerQUICC Reduced Instruction Set Computing microprocessor running at 48 MHz.

Voice/fax interface cards for the 1750 sport two FXS, FXO or E&M ports for connecting to phones, fax machines, key systems, PBXs and off-premise sites, such as telco central offices. The WAN interface cards are the same as those for Cisco's 1600, 1720, 2600 and 3600 series routers. The cards include one- and two-port serial, two-port sync/async, ISDN Basic Rate Interface, 56/64K bit/sec four-wire DSU/CSU and T-1/fractional T-1 DSU/CSU.

The device runs Cisco IOS software that supports quality of service, and VPN encryption, firewalling and tunneling.

Cisco plans to add broadband access capabilities to the 1750 "relatively soon," sources say. They expect Cisco to modularize its model 633 symmetric digital subscriber line router and offer it as an option for the 1750.

Beta testers say the 1750 is not as versatile as other Cisco voice-over-IP offerings but that small businesses should nonetheless be pleased.

"It's going to be a godsend for small sites," says Bill Woodcock, principal of ISP Zocalo Internet Services in

Oakland, Calif. "It gives you a lot higher density at a lot lower price. Being able to do six lines of voice in one box without paying for it is a nice thing."

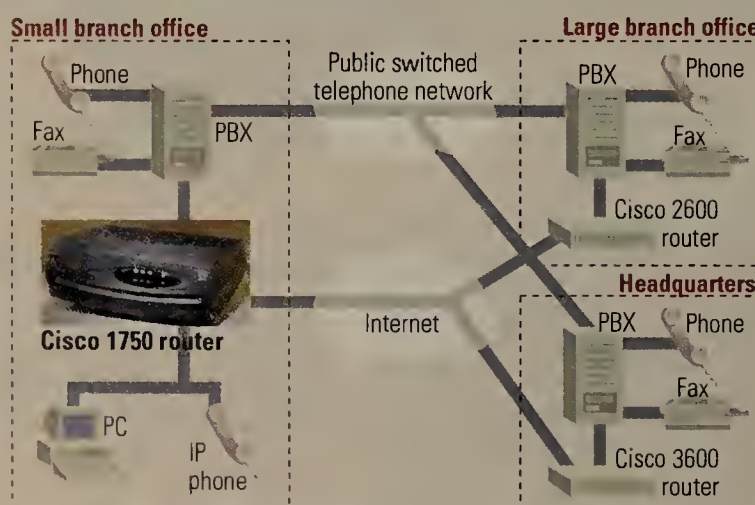
The 1750 will compete against Motorola's Vanguard voice-enabled routers, which support up to four or six analog voice ports, depending on the model.

While the basic 1750 costs roughly \$1,800, a two-port data/voice version costs an extra \$500 and a four-port edition costs about \$2,700. The 1750 will be available Aug. 30.

Cisco: [www.cisco.com](http://www.cisco.com).

## Convergence enabler

**Cisco's new 1750 router handles voice and data traffic for small businesses and branch offices.**



The router will let small businesses and offices start out with a basic data-only router for Internet access and virtual private networking, and add voice and video capabilities as needed, says Chris Nicoll, an analyst at Current Analysis in Sterling, Va.

Indeed, convergence is ex-

be able to resell the 1750 as the customer premises equipment piece of a product/service bundle and position it as a delivery vehicle for advanced IP telephony services.

According to The Yankee Group, the voice- and fax-over-IP services market is expected to grow from \$160 million in

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**Qwest,**  
continued from page 8

model followed by other carriers, such as MCI WorldCom and DSLnetworks (see story, page 25). "It gives them better coverage," Zcristi says.

Qwest promises to offer enhancements in the future, including virtual private networks, voice over IP and

application hosting over high-speed DSL wires, but would not say when.

## Qwest expanding

Speeds for the Qwest service range from 128K bit/sec to 7M bit/sec, and the service costs between \$119 and \$849 per month (see graphic, page 8). Qwest charges a \$500 installation fee.

The Qwest service is available in Boston; Chicago; Los Angeles; New York; Oakland, Calif.; Orange County, Calif.; Philadelphia; Sacramento, Calif.; San Diego; San Francisco; San Jose; Seattle and Washington, D.C. Later this year, 19 more cities will be added.

Meanwhile, IXC is offering DSL service through its

retail subsidiary Eclipse Telecommunications.

IXC's service speeds range from 160K bit/sec to 1.5M bit/sec, and the service costs \$229 to \$679 per month, depending on speed and the length of the service contract.

The price includes Internet access, and there is a \$325 installation fee.

IXC's service is available in Austin, Texas, San Diego and Los Angeles.

By year-end it will also be available in New York; Chicago; Washington, D.C.; San Francisco; Boston; Dallas; Houston; Atlanta; Miami; Philadelphia; Phoenix and Tampa.

Qwest: [www.qwest.com](http://www.qwest.com);  
IXC: [www.eclipsetel.com](http://www.eclipsetel.com)

**Names,**  
continued from page 1

adoption in browsers, portals, search services and directories anticipated next year.

The Common Name standard will benefit organizations that run large Web sites by reducing the number of end-user support calls and lowering help desk costs. For end users, the standard means no longer having to remember or type in a series of dots,

vices to locally register common names for documents that reside in their intranets. For example, a 1996 budget report could be accessed by simply typing in "1996 budget report" (see graphic).

"You won't have to remember the HTTP address. You can just call a document by its name," explains Michael Mealling, a senior research engineer at Network Solutions and one of the authors of the proposed standard.

a structure for computers to access URLs," says Nicholas Popp, chief technical officer at Centraal and a co-author of the proposed standard. Centraal is a directory service provider. "There's a layer of naming that's missing — a layer that is human-friendly and that would simplify navigation," he says.

Common names are used to navigate the Web today in the form of Centraal's RealNames, Network's NetWords, America Online's KeyWords, Netscape Navigator's Smart Browsing and CompuServe's Go Words.

The IETF group wants to unify all of these proprietary approaches with a standard API.

Once standardized, common names could be used in applications such as:

- Corporate databases, where the common name is the one used internally to identify a document, an item in inventory or a product coming off the manu-

related Web site.

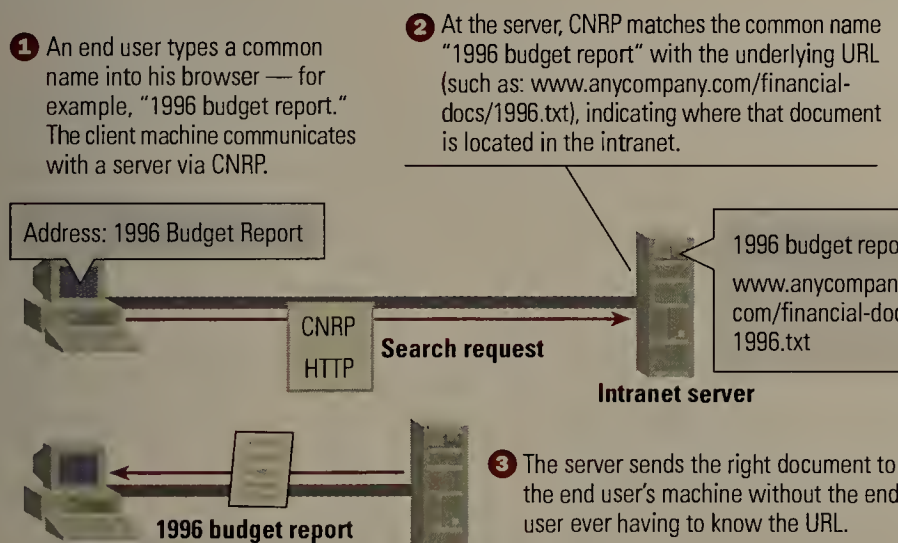
"This is an Internet technology that is ideal for intranets," says Marshall Moseley, a consultant to Network and a member of the IETF group pushing for a Common Name standard. "Imagine a company like Boeing having a database of all the engineer-

ing documents for the F-22 fighter and being able to pull up documents by their regular names and not their URLs."

The Common Name standard could eventually be integrated with e-mail standards to allow end users to send messages without knowing the recipient's e-mail address. ■

## Retrieving documents the easy way

The Common Name Resolution Protocol (CNRP) will ride over HTTP, letting intranet users retrieve documents by typing common names into their browsers instead of lengthy URL addresses.



dashes and backslashes in order to find the information they need.

"Anything a home page provider can do to make it easier for end users to find information is useful," says Vic Powell, Webmaster for the U.S. Department of Agriculture. Powell, whose Web site contains thousands of pages of documentation and averages more than two million hits per week, calls the Common Name standard "very interesting."

With a standard in place, enterprise customers will be able to set up their own ser-

The Common Name Resolution Protocol will operate behind the browser to match words or phrases, such as company names, book titles or songs, to their underlying URLs. Unlike with URLs, more than one item can have the same common name as long as the two items are in different categories. For example, typing in the word "Apple" might bring up Apple Computer's Web site or information about growing apples, depending on the context of the request.

"Our vision is extremely simple: We want to provide

facturing line.

- Electronic commerce sites, where the common name is a brand name and refers to a stock or part identification number.

- Business directories, where the common name calls up contact information, products or stock quotes.

- White pages, where the common name is a last name and it calls up a telephone number or e-mail address.

- Yellow pages, where the common name is the name of business or a description of the business and calls up a



The  
**Scoop** The news  
behind the  
news

## THE NAME GAME: NAMING TERMS

In the jargon of the Internet, naming terms are popping up faster than .com companies are going public. Here's a primer of naming conventions you need to know:

- Uniform Resource Locators (URL) are the strings of words, dots and backslashes that help you navigate the Internet. For example, typing in "http://www.amazon.com/exec/obidos/subst/misc/company-info.html/ref=gw\_m\_b\_aa/002-9155849-8750636" takes you to corporate background materials on Amazon.com's Web site. With URLs, end users must know the exact address of the information and where it is located. Each piece of information has a unique URL. URLs are the main naming scheme used on the Internet today.

- Common Names are regular words that are used to hide URLs from end users. For example, typing in the common name "Amazon" might get you to the same page as the URL listed above. With common names, end users do not need to know the exact address of the information they want or where it is located. More than one entity can have the same common name as long as they're in different categories, just as in trademark law. For example, a travel Web site about the Amazon might have the same common name as the online retailer. A Common Name standard is under consideration by the Internet engineering community and could be approved next year.

- Uniform Resource Names (URN) is a proposed naming scheme for machine-to-machine communication. URNs will not be known by end users; instead they will help computers find information on the Internet without needing to know where it resides. A URN for a document on the Amazon.com Web site might look like this: urn:amazon:index:2141. A good analogy for URNs are the standard book numbers on the back of every book sold in the world today. URNs are still experimental and no industry standard has been approved.

- Uniform Resource Identifier (URI) is a generic term that can refer to either a URL or a URN.

— Carolyn Duffy Marsan



## Don't say it with smileys

If we were standing face to face and I said something along the lines of, "I absolutely disagree with you, and I think you're an idiot," and then I smiled, what would you do? You would probably think "smug b\*#\$%d" and attempt to smack me around the head.

So what I can't figure out is why people are willing to do in e-mail what they won't do in person? Why do people feel no compunction about insulting me online and following it up with a smiley face?

Smileys are those concatenations of ASCII characters that are supposed to convey emotion in plain text messages, as in :-). I find it impossible to believe that *Network World* readers don't

know about smileys, but just in case, :- ) is supposed to imply lightheartedness as in "I can't find the 'any' key :- )."

Thousands of smileys have been invented for all sorts of things. There are smileys for sadness, :- (, smugness :- ), resoluteness :- |, a prognathous jaw :- |, a lolling tongue :- P

and a pointy nose :- ^).

These were once funny, but now they have descended to the nether regions of cultural hell alongside "Precious Moments" figures and Day-Glo velvet pictures of Elvis.

<confession> Out on the Internet there are far too many Web sites that have endless lists of smileys and their "meanings," and I must confess that I included a list of smileys in my book *Navigating the Internet*. <excuse> That was published in 1993 when the whole Internet thing was novel. </excuse> </confession>

In my "any" key example, using a smiley to indicate the lack of seriousness is obviously irrelevant, but you see the same convention used in messages such as "I absolutely disagree with you :- )."

Now ask yourself what that message really means. I contend

the message means, "I absolutely disagree with you, but please don't get serious about it." That's a pretty reasonable request, so why beat about the bush? Come right out and say it.

But, of course, context is everything. If the message were in reply to, "Do you think the logo should be in blue?" then the sender would probably not be too upset. But in response to, "You have to marry my daughter, you swine," the result would, most likely, be quite different, particularly if someone toting a shotgun delivered the message.

So how are smileys used badly? Many people add smileys to be cute, so "Am I trying to be cute?" should be one of the first questions to ask.

If the answer is yes and the recipient isn't your mother or a paramour who doesn't mind a dose of saccharine, then go ahead and look like a half-wit if you wish.

On the other hand, if you are trying to take the sting out of a comment that you can't figure out how to rephrase and you think a smiley is the way to go, save the message and lie down in a dark room until the impulse subsides. Chances are, you will soon realize that you were attempting to be duplicitous.

<digression> People write terribly when it comes to e-mail or, for that matter, business correspondence in general. I recently heard of a large organization that retains a staff of four writers just to rewrite memos created by vice presidents so they can be understood! </digression>

So when you receive a message containing a smiley, ask yourself what the sender is really trying to say, and assume that the sender is being deceitful.

When you feel tempted to use a smiley, ask yourself what it is you're trying to say, whom are you saying it to and what is the purpose. After you choose your smiley, don't use it. Learn to say what you mean.

Say what you mean to [nwcolumn@gibbs.com](mailto:nwcolumn@gibbs.com).



MARK  
GIBBS



The latest on the  
Internet/intranet industry

**Buzz has taken a beating** from the e-mailbag lately, with the heaviest blows coming from those who took exception to a May 17 item about 19 brokerage workers who got canned for "Internet abuse" at **Edward Jones** in St. Louis.

My point was that the penalty exceeded "the crime" of e-mailing naughty jokes around the office or peeking at smut sites. "Petty tyrants" was just one unkind phrase used by me to describe those who did the firing.

Readers leapt to the defense of the tyrants.

"In this day and age, to ignore this type of abuse of company property sets you up for sexual harassment charges," writes **Dave Zamzow**, a certified public accountant, who may be reading the wrong trade publication. "If they have indeed communicated these policies to their employees and then enforced them, where is the complaint?"

"These people do, as you say, have spouses, children, mortgages and dreams, but by exercising some personal responsibility they would still have jobs, too," Zamzow continues. "Don't blame the company for being [hopefully] fair and consistent in its enforcement of policies. To do otherwise is irresponsible."

Suspensions would have accomplished the same goals, no?

Prior to the firings, Edward Jones' management issued a memo asking employees to confess their Internet sins. Those who did were treated less harshly than those who hid their "guilt."

"Edward Jones gave the employees a chance — all they had to do was tell the truth and they would still have their jobs," writes **Chad Cloman**. "In essence, Edward Jones fired people who misused company property and then attempted to cover up the fact (Didn't we lose a president once over that type of problem?). I don't think I'd want employees with these characteristics, either."

There were a few letters taking my side. The best was from a reader who took to heart my lament that I did not have an Edward Jones account that I could cancel in protest.

"Hey, I did just that and removed my assets from Edward Jones and expressed my feelings about their inhumane policies on their Web site e-mail service," writes **Ron Onstott**. "Just thought you would like to know!"

Made my day, Ron.

**Another writer has a point** to make about earlier criticism of Buzz from a female IT professional who took offense at a column she thought had disparaged women.

"With regard to the woman who wrote 'Being female does not make me a putz,'" writes **Richard Gams**, CEO of Prologue Research International in Columbus, Ohio, "my understanding is that 'putz' is one of many Yiddish slang expressions for the male sex organ. If I am correct, then being female would make your writer definitely NOT a putz."

He is correct. Wish I'd thought of that when the woman first wrote.

**My favorite letter** comes from **Michael Jones** of Coral Gables, Fla. His suggestion that two items I had written were grounds for my dismissal made me awfully glad I don't work at a brokerage. (It's tough keeping up with all these Joneses who want everyone fired.)

The first item he took exception to was a passing wisecrack — "gratuitous," Jones contends — about the Reagan administration.

Buzz pleads guilty to being a liberal Democrat.

However, I will fight this next charge all the way to the Supreme Court.

"The second false note is the lead-off paragraph of the June 7 story 'Notes, Domino score big,'" Jones writes, referring to a news story I wrote about the National Hockey League's use of those Lotus products.

"A Zamboni doesn't make ice," Jones continues, "but smoothes it for further use."

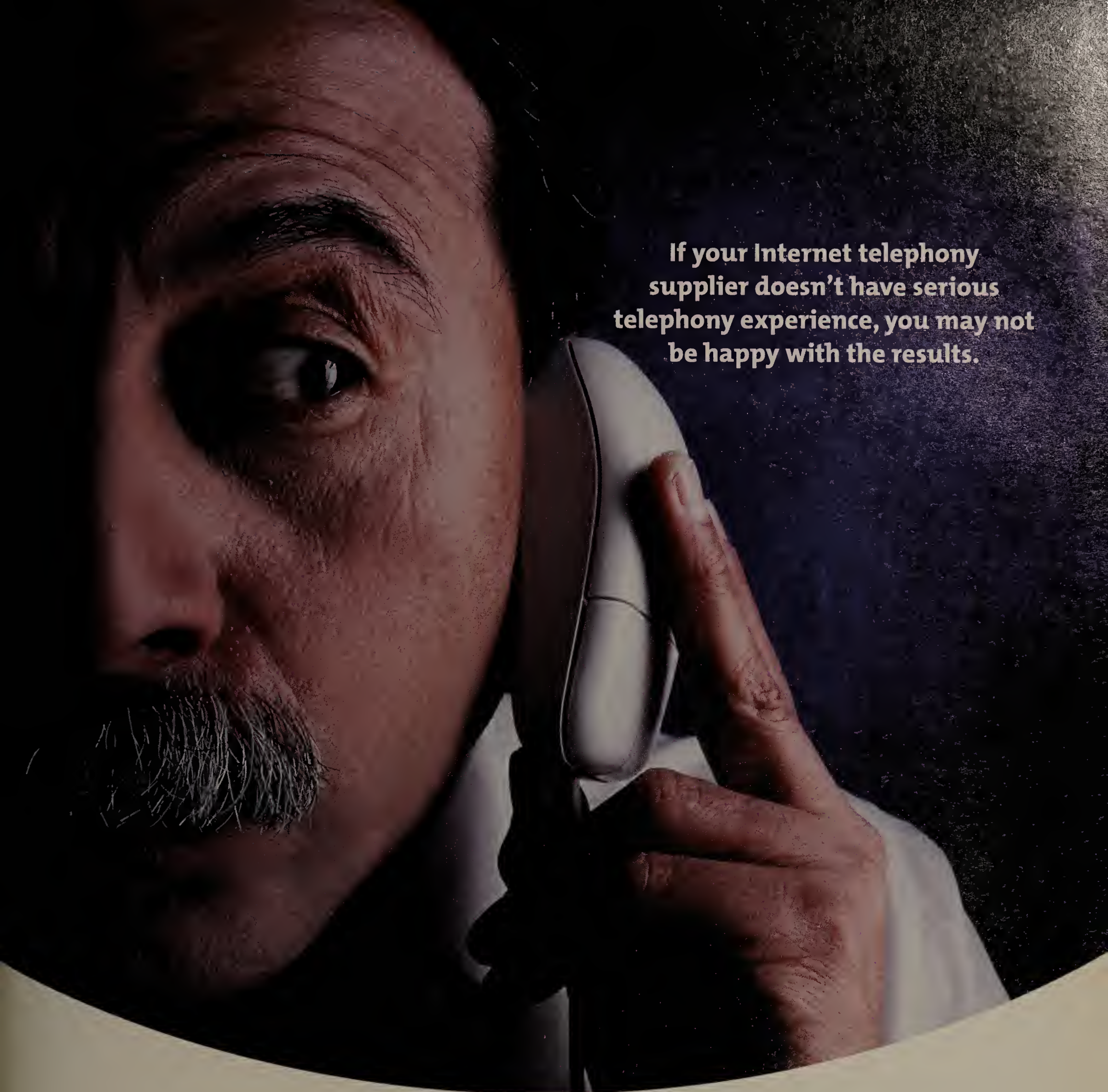
I wonder what he thought when Reagan called ketchup a vegetable.

*Although on vacation — apparently undeserved — McNamara still wants to receive your Internet-related tips at (508) 820-7471 or [buzz@mww.com](mailto:buzz@mww.com).*



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